The RUBBER AGE

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Late News of the Rubber Industry

Leaders Say Stock Market Fall Will Not Hurt Rubber Industry

THAT the rubber industry and business in general will not be disastrously affected by the recent slump in the stock market is the opinion voiced by several leaders of the domestic manufacturing trade. P. W. Litchfield, president of the Goodyear Tire & Rubber Company, F. A. Seiberling, president of the Seiberling Rubber Company and William O'Neil, president of the General Tire & Rubber Company, have been particularly optimistic in statements which they have given for publication this month.

"Conditions in general business are more stable than the recent behavior of common stocks would indicate," said Mr. Litchfield. "General business, which has been for some time somewhat above normal, has been keenly competitive and has run close to actual cost of production and distribution in many lines. While there are indications that the physical volume of business may not keep up to the level of the past two years, the reduction in volume during the next year should be of a minor character.

"Common stocks have recently been selling much higher than their present normal basic earning capacity justified and were, therefore, subject to readjustment. Industry itself is in a healthy condition and most concerns properly and conservatively managed will not be affected by the stock market. Consumption needs of the country will not vary greatly and in the absence of large inventories at high prices as compared with seven or eight years ago, should prevent any substantial decrease in the intrinsic value of industrial securities."

General business conditions with relation to the rubber industry were discussed by Mr. Seiberling, president of the Rubber Manufacturers Association, in a talk before the Akron Real Estate Board. "The stock market," he asserted, "has been on a drunk for the last 12 months and is now sobering up. We are now in the hangover period. Business in general is in for a recession, but it will be neither drastic nor long. It will be a good thing. We will go back to the sound foundations of business and start to build over.

"Akron is not going to slump. Although business conditions are not termed good at present, the pick-up will begin after January 1. The year 1930 will be a good year, and wages in Akron will be kept up to the present standard. Since the business cataclysm of 1920, Akron industries have been building on a solid foundation and they will continue to build on this base."

Mr. O'Neil was specific about the tire industry. "The present stock market slump," he commented, "can not affect sales of tires. Tires are necessary to a larger investment regardless of whether or not that investment is considered a luxury. A very excellent thing in the rubber picture is the fact that rubber is selling at production cost. If it were to go lower, it couldn't stay lower long. Consequently, rubber companies are not facing an inventory loss."

Goodyear Earns $18,425,000 In First Nine Months of 1929

THE Goodyear Tire & Rubber Company, according to its report made public early this month, has maintained during the third quarter of the year the rate of profit set during the first six months. For the nine months ended September 30, the company reports a consolidated net profit, after all charges and taxes, of approximately $18,425,000.

Preferred dividends for the period amounted to about $4,100,000, leaving $14,325,000 to be applied to 1,398,126 shares of no-par common stock outstanding at the end of the period, or, roughly, the equivalent of $10.25 a share. During the first half of the current year, the Goodyear Tire & Rubber Company showed a net profit of $12,633,865, equal after preferred dividends to $7.02 a share on the same amount of common stock.

It would apparently follow, therefore, that Goodyear earnings for the third quarter of the year were approximately $5,791,135, or the equivalent of $3.23 a share on the common. This indicates only a slight let-down from the rate of earnings set during the first two quarters of the year. Goodyear has not in the past issued quarterly reports or approximated nine months' earnings, and there are, therefore, no comparable figures of other years.

P. W. Litchfield, president of the company, states that the outlook for earnings in the last quarter is largely a question of crude rubber prices, which have recently been at or near the low point of the year. The company's raw and finished inventory position is normal for this season and Mr. Litchfield says that the outlook for 1930 is for even larger physical volume of business than that enjoyed by the company during the current year, which has broken all previous records.

During 1928, the company earned a total of $13,327,843, as compared with $13,135,666 in 1927 and with $8,799,138 in 1926. The common stock was placed on a dividend basis during the second quarter of 1929 at the rate of $5 a share annually.

A part of the great throng that gathered in the huge hangar of the Goodyear-Zeppelin Corporation at Akron on November 7 to witness the "ring laying" ceremony for the new Navy dirigible

National Tire Dealers' Assn. Plans Purchasing Combine

DEFINITE steps toward the organization and actual operation of a new retail purchasing body were taken in connection with the tenth annual convention of the National Tire Dealers' Association, held at the Hotel Sherman, Chicago, Ill., from November 11 to 14. The Automobile Tire Dealers' League of America, which was formed last April for the same purpose, was merged with the United Tire Stores Corporation of America, and George J. Burger, of New York City, president of the League, was chosen to act as president of the merged organizations.

While the United Tire Stores Corporation is in every respect a separate entity, not officially connected with the N. T. D. A., it has the support of most of the officers and directors of the latter body and many of the several hundred N. T. D. A. members present at the Chicago convention signified their intention of joining the new group. The corporation was chartered in Delaware with 5,000 shares of no par stock, one share of which will be issued to each dealer-member at a cost of $100. Under its present charter, therefore, the organization has an ultimate limit of 5,000 members, with a purchasing power that is estimated at more than $50,000,000.

Other officers of the United Tire Stores Corporation are S. B. Harper, of Fort Smith, Ark., vice-president; M. J. Barry, of Baltimore, Md., second vice-president; Thomas J. Lane, of Jersey City, N. J., treasurer; and Thomas Barbee, of Louisville, Ky., secretary.

The exhibition of merchandise and equipment held together with the convention was one of the best in the history of the association, and the addresses and discussions at the regular sessions were uniformly interesting. Speakers included F. A. Seiberling, president of the Seiberling Rubber Company and of the Rubber Manufacturers Association; J. A. MacMillan, president of the Dayton Rubber Manufacturing Company; Fred Oberheu, president of the United Motors Service; Floyd A. Allen, assistant to the president of the General Motors Corporation; A. E. Ferragen, of the Motor Wheel Corporation; and Ward S. Perry, president of the Vesta Battery Corporation.

S. B. Harper was elected president of the N. T. D. A. on the final day of the convention, succeeding Colonel Hubert V. Eva. Other officers voted in were M. J. Barry, first vice-president; Fred Schukraft, Chicago, second vice-president; T. V. Rudy, Fort Wayne, Ind., secretary, and Russell Harp, Akron, O., treasurer.

Rubber Growers' Association May Back Collective Selling

A LONDON dispatch to the Rubber Exchange of New York states that the committee appointed by the British Rubber Growers' Association last April to inquire into the possibilities of a co-operative selling plan for crude rubber delivered its report. The report recommends that the leading producing groups be approached with a view to obtaining an agreement for the collective selling of plantation outputs.

This agreement would virtually control about 80 per cent of the London companies' outputs, and it is believed that the smaller companies would readily join the scheme. It is understood that the recommendations were adopted in principle on November 18 by the Council of the Association.

The rubber growers' committee, in its report also intimates that concrete proposals may be put forward envisaging restriction of output in conjunction with the Dutch producers. It is probable that recommendations will be made to suspend tapping of trees on Saturdays and Sundays.

A later dispatch from Amsterdam to the Rubber Exchange understood that there was no truth in reports that representatives of rubber growers in the Dutch East Indies are going to London next Monday. Pending receipt of replies from French and Belgian producers to the recent Dutch proposals, no conference is likely, the cable said.

The Amsterdam advice also said that nothing is known of the alleged new plan of the British rubber growers for coperative selling, set forth in London dispatches yesterday.

Maurice Maude, director in several rubber producing companies and who recently returned from Malaya, supports the move to abolish plantation work on Sundays, according to a Central News cable from London. He estimated that such a measure would cut crop outputs about 14 per cent and prove of considerable assistance to the industry at this time.

Mr. Maude stated that Ceylon growers have already ceased tapping on Sundays and that two holidays per month are being observed on Dutch estates. It is regrettable, he stated, that no such steps have been taken by estates in the Federated Malay States or the Straits Settlements.

Rubber Sinks to New Low Price, $250 a Ton Under Year's High

WHEN the spot price of crude rubber on the Rubber Exchange of New York closed at 15.50 cents a pound on November 13, it completed a decline of 11.10 cents a pound from the year's high of 26.60 touched on February 26, equivalent to a loss of $248.64 per long ton. On the outside market in New York, the spot price was quoted at 15¾ cents a pound as against a 1929 high of 26⅞ cents on February 26, a net loss of 11⅛ cents.

Applied to the estimated world production for 1929 of around 800,000 tons, the depreciation in the commodity amounts to approximately $200,000,000. The loss in the value of crude rubber on hand, in transit overland and afloat to United States ports at the end of October is placed at $34,579,500, if compared with the year's best price and applied to the 138,318 tons reported for that month by the Rubber Manufacturers Association.

The lowest actual sale consummated on the New York Exchange occurred shortly before the close on November 13, when a contract for December delivery was sold at 15.70 cents. The previous low record for the nearby delivery on the Exchange was made on April 24, 1928, when a deluge of selling on the abandonment of British restrictions sent the price to 16.50 cents. The outside market price for crude rubber has not been so low since 1922.

American Rubber Consumption Gained Slightly in October

CONSUMPTION of crude rubber of all classes by manufacturers in the United States in the month of October is estimated at 34,800 long tons, according to statistics compiled by the Rubber Manufacturers' Association. This apparently shows a slight increase over the estimated consumption of 34,707 long tons during the month of September, but because of the greater number of working days in October actually reveals a decline in the daily volume of production at tire and rubber goods factories. It indicates a marked decrease from the consumption of 40,857 long tons in October, 1928.

The total consumption of crude rubber by American manufacturers for the first ten months of this year, according to the first two quarterly reports and the last four monthly figures of the Rubber Manufacturers' Association, has been 417,164 long tons, as compared with 365,488 in the first ten months of 1928. Should November and December consumption average 34,000 long tons a month, the complete 1929 domestic absorption will be approximately 485,000 long tons, exactly as estimated by THE RUBBER AGE last April.

These estimates are based on reports received by the Rubber Manufacturers' Association from manufacturers who are estimated to represent 90 per cent of the total consumption in the United States.

The association estimates total domestic stocks of crude rubber on hand and in transit overland on October 31 at 88,483 long tons as compared with 84,362 long tons as of September 30. Crude rubber afloat for United States ports on October 31 is estimated at 49,835 long tons as against 49,480 long tons on September 30. These estimates are based on reports to the association which are believed to represent 95 per cent of the total for the United States.

Name Trustee in Bankruptcy Suit Against Swinehart Tire & Rubber

THE first meeting of creditors of the Swinehart Tire & Rubber Company, against which a bankruptcy action was started last July, was held on October 30 at the Akron office of Harry L. Snyder, local federal referee in bankruptcy. Robert Guinther, of the law firm of Slabaugh, Seiberling, Huber & Guinther, was named trustee of the company as the chief business of the meeting. A claim schedule, setting forth the various amounts charged against the Swinehart company by the creditors, was filed with Snyder shortly before the creditors' meeting.

The appointment of a trustee opens the way for a settlement of the involuntary petition in bankruptcy filed against the company on July 25 in federal court at Cleveland. Mr. Guinther as trustee will handle the claims and accounts of the rubber company until its affairs have been adjusted and a final accounting is approved by the federal court. The bankruptcy petition asked that the land, plant and equipment of the Swinehart company be sold to satisfy claims.

The original petition was filed by the English Mica Company, New York City, the Poncet Davis Company and the C. P. Hall Company, both of Akron. Liabilities of the Swinehart Tire & Rubber Company were set forth in the petition at $450,000, the largest item being $310,000, owed to two Akron banks, the First Trust & Savings Bank and the Central Savings & Trust Company. The other creditors are dealers in rubber, fabric, chemicals and other materials used in tire manufacturing.

According to the petition, the bankruptcy action was started because of preferential payments made to the two banks on paper which they hold, indorsed by Thomas Walsh, president of the Swinehart company. The other creditors claim payments should have been made to the banks on the same basis as payments to the smaller claimholders. The creditors at the time asked that a receiver be named at once for the Swinehart company on the grounds that the company had a lack of working capital and that it would be necessary to liquidate the assets to pay the outstanding indebtedness.

The Swinehart Tire & Rubber Company was organized at Akron in 1904 and has specialized in the manufacture of solid tires. Early this year it acquired the business and patents of the Erie Rubber Company, Sandusky, O., without taking over the latter's factory. The Swinehart balance sheet as of December 31, 1928, showed total current assets of $868,790, as compared with total current liabilities of $628,859, leaving an indicated net working capital at that time of $240,201.

Mohawk Rubber Company Passes Common Dividend

DIRECTORS of the Mohawk Rubber Company early this month decided to omit payment of the dividend on the common stock of the company due at about this time. The common stock earlier this year was placed on a quarterly dividend basis of one per cent in stock and 75 cents in cash. The directors have stated that the company is in good financial shape, with a ratio of current assets to current liabilities of six to one.

No income statement has been made public by the Mohawk Rubber Company later than for the first half of the present year. During the first six months of 1929, the company showed a profit of $283,945 after interest and depreciation, but before federal taxes, comparing with a profit of $296,464 in the first six months of 1928. During the full year of 1928, the company earned $766,040 and in the full year of 1927 showed a profit of $631,172.

Last year, of course, was unusual because of the upset in the crude rubber market, but it has generally been the case that the larger portion of Mohawk's earnings have come in the second half of the year. This is due to the fact that the company's sales are for the replacement market, rather than for the original equipment trade, and sales are heaviest in the summer touring season.

Mohawk Rubber capital stock at present consists of 21,643 shares of 7 per cent preferred and 114,344 no-par shares of common. After a refinancing plan was put into effect and a loan negotiated for $800,000 in March, 1928, the company's old common stock had a spectacular rise from 35 to a peak of 246, after which a stock dividend of 300 per cent was declared, splitting the value of the shares on a four-for-one basis. The new common stock sold as high as 66 early this year, but has currently dropped to around 10, or close to its 1928 low, with adjustment for the split-up. The preferred stock has declined from 90½ to an asking price of 70. Both stocks are listed on the Cleveland Stock Exchange, and the common shares are also traded in on the Chicago Stock Exchange.

THE Candian production of rubber goods for 1928, according to the census of industry recently published by the Dominion Bureau of Statistics, was valued at gross $97,208,713—an increase of $5,794,983, or by 6.34 per cent over 1927. The output of rubber tires comprised 51.1 per cent of the total value or $49,708,538, rubber footwear 33.4 per cent or $32,412,611, and all other rubber goods 15.5 per cent or $15,087,564.

Quality Control of Raw Materials and Stocks in Process

Service Laboratories in the Individual Plants Have Developed Definite Specifications for All Classes of Raw Materials—Samples From Each Shipment Received Are Carefully Examined and Results Checked Against Specifications

By WALTER J. GELDARD

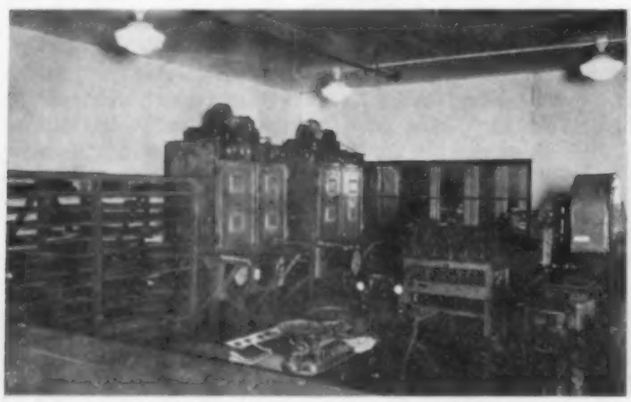
Product Specifications Department—Fisk Rubber Company

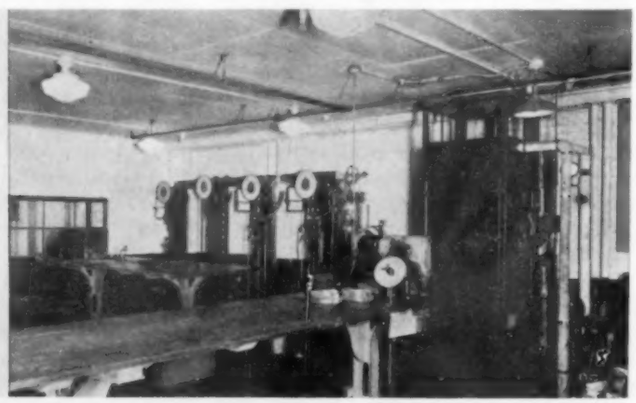
PROGRESS in any of our modern industrial plants has been definitely coupled with developments in technical control over raw materials,—those materials in process, and finally over the finished product. The rubber industry is no exception. Gone are the old rule-of-thumb methods for purchasing the raw materials, for their compounding, processing and curing. The chemical and physical laboratories, the mill-room laboratories and thermocouples control the progress of the compounds down the straight and narrow path to uniform finished products.

The methods of control have been worked out differently by various plants, but ultimately the objects and results are the same. Consider first the raw materials coming into our plants. Specifications have been issued covering the essential characteristics of each. These specifications may be based on chemical or physical tests, sometimes both. With many chemicals, pigments, accelerators, etc., the chemical form or composition is so clearly defined that they are readily analyzed for purity. Others of more complex structure must be assigned rather empirical specifications. Unfortunately our knowledge of some materials, particularly as to their effects in compounding, is so meager that exact chemical analyses are as yet little used. For instance, pine tar may be cited as one material, extensively used, of which we have little exact information. A few superficial tests, such as specific gravity, viscosity, volatile matter and acid content, are made to check the uniformity of each succeeding shipment. On the other hand, it is inconceivable that this raw material, from which over two hundred different chemical compounds have been isolated, many of which are active in rubber compounds, can be chemically uniform from shipment to shipment. Materials of this type, however, are in the minority and our specifications are real control factors.

Strange as it may seem to the layman, the most important single raw material to the industry, rubber itself, is not purchased by specification. We must depend on a classification of grades as set up by the Rubber Association and upon tests of each lot to determine the suitability of each for whatever use it may be intended. It is evident then, in spite of the progress we have made in compounding and manufacturing, that from a strictly specification angle there is much to be learned about many of our raw materials before it will be possible to set up a firm basis of purchase.

Upon receipt of a shipment of raw material it is properly sampled and the sample delivered to the service laboratory or general testing laboratory. This laboratory is equipped with the latest equipment for the chemical and physical testing of rubber and compounding materials. One part of this laboratory is a constant temperature room in which are set up the tensile, abrasion and flexing machines as well as artificial ageing ovens, and racks for storing cured and uncured batches undergoing physical tests. Based on the results of research work at the Bureau of Standards, this room is maintained at 70°F and 65% relative humidity constantly. Our samples are analysed either chemically or in suitable test formulas (frequently in both ways), and the results checked against the specification. Acceptance or rejection follows. In any case no material is allowed





CONSTANT TEMPERATURE ROOM

Ageing Oven, Flex Tester, Punch Press and Stock Racks

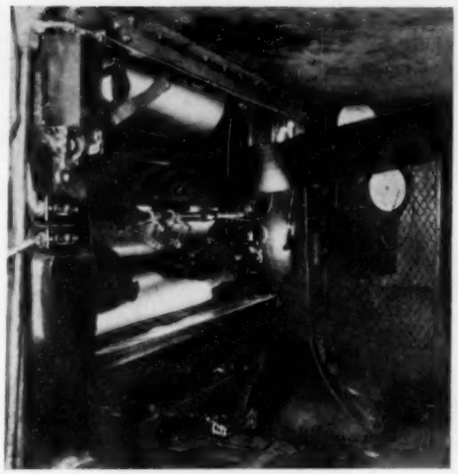
Tensile and Abrasion Machines, Temperature and Humidity Control Units

to be used in manufacturing until the approval of the service laboratory is obtained.

With our raw material accepted and placed in stores, let us turn to the next point of control in the manufacturing process, the preparation of the compounded stocks. Whether the mixing is done on the conventional mills or the later forms of internal mixers, the correct mixing order must be worked out. This is done by trained processing men who are familiar with the nature of the stock, its use, and limitation in processing. In addition to the proper mixing order, the opening or nip between the rolls, their temperatures, the temperature of the stock and the time of mixing is determined. The control of nip is facilitated by a special gauge mounted on the mill frame which indicates the opening between mill-rolls at a glance. At this point another control organization enters the picture—the mill-room laboratory. The purpose of this group is two-fold, first, the testing of the mixed batch of stock for its correct curing properties, and second, the routine checking of plasticities or recoveries of all stocks. As soon as the stock is completely mixed, a sample is taken to the laboratory where it is cured in as short a time as possible. The cured sample is tested for hardness by means of a durometer and its specific gravity determined by gravitometer or balance. These figures are compared with a standard specification and if satisfactory the stock is allowed to go on in its processing. If not, it is held out and rechecked or analysed. This part of the checking must be done as rapidly as possible, since a great many operations today are "direct" or almost continuous from the mixing through the calendering or tubing and assembly. This cure check, then, assures us that the raw stock is properly compounded and mixed and will react correctly in the final vulcanization of the product.

Value of Uniformity in Processing

The second function of the mill-room laboratory, noted above, has become increasingly important as we have come to understand more fully the value of uniformity in processing. The plasticity or flow number of a stock, together with the temperature at which it is handled, gives us the basis for calendering and tubing machine operations. This value is obtained either by a form of plastometer or more rapidly by a form of penetrometer. With this data available the operator or man in charge of processing control can regulate the temperature of warming, feeding, calendering or tubing to get the desired product for building or assembling. Recent experience with the so-called low-temperature, fast-curing accelerators such as are being used for both tires and tubes has emphasized the importance of knowing the plasticity and being able to control operating



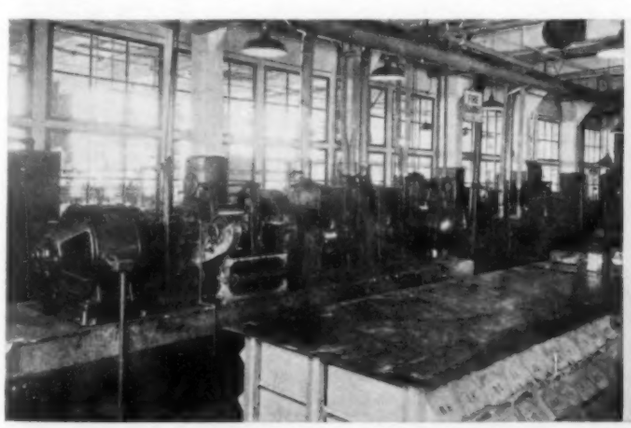
Heat Collector and Recorder on Four-Roll Fabric Calender

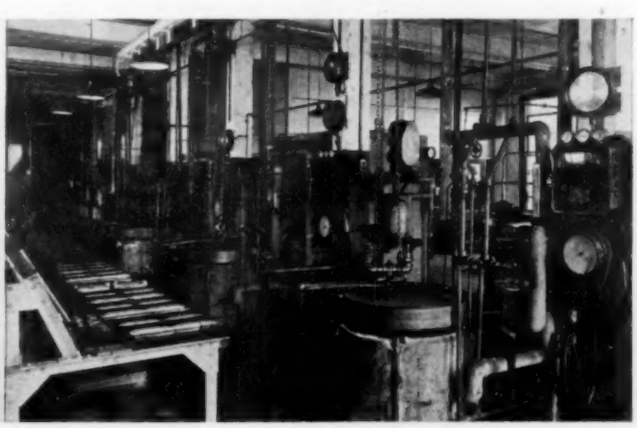
temperatures. The latter has been worked out by means of special shoes or collectors on mill and calender rolls connected to recorders and controlled, in the case of calenders, by automatic equipment which maintains uniform surface temperatures on the rolls.

With the information obtained through observation of operating conditions and from data compiled in the mill room laboratory, a milling and calendering specification is issued. This specification covers in detail the various steps just outlined above. Every step in the proper mixing, calendering or tubing is given, with such control data as temperatures and plasticities subject to frequent check by the laboratory. The use of the specification at the mill itself is simplified by a form of "clock," driven from the mill shaft. At designated intervals around the face of the clock are indicated the proper additions or operations to be made during the mixing. A moving hand indicates these various steps. The operator or supervisor can see at a glance whether or not the specification is being properly carried out. No one familiar with problems of the mill-room would question the value of uniformity of successive batches of stock which are in process. To obtain this result, a firm specification, properly worked out, is the surest method. The mill-room superintendent, his assistants and the operators themselves go about their work with the confidence born of knowing that they are not dependent upon hit-or-miss methods such as the thumb-nail for determining plasticities or the hand for determining temperatures.

Control methods in the subsequent operations involved

(*Concluded on page* 203)





SERVICE LABORATORY

Compounding, Milling and Calendering Equipment **Pot Presses and Curing Equipment**

Controlling Production *by* Mechanical Devices

System Possesses Advantages of More Complete Control, Greater Accuracy, Less Personnel and Insures Better Inter-Departmental Coordination

By LINCOLN M. KEEFE
Woodruff, Keefe, and Rogal, Inc., Engineers

THE term "production control" may be defined as the scheduling and regulating of the flow of production in such a manner that the facilities for manufacturing may be employed most economically. Before an article can be manufactured the specifications must be determined. Similarly, before a production control system can be organized the specifications must be recorded in form suitable for effective use. It is here that the use of mechanical devices has been brought into play, but for the most part only in connection with the detail of routine.

Very little has been done in the field that offers the greatest possibility of saving materials and costs. In the metal working industries master specifications assume the role of the blueprint of the architect, and specifications are reproduced by this method for the most part. But beyond this there is no widespread or consistent use of any other method for recording specifications.

Realizing that the specifications for a manufactured article are used in exactly the same detail every time the article is to be manufactured, it is a logical idea that the recording of specifications and their reproduction with detail schedules and quantities should be done mechanically, thus saving much duplication of effort and cutting process time sharply.

There are many mediums now available, some of which are:

1. Tracing linen, vellum, onion skin paper, etc., which will permit blueprint reproduction. This method is economical when plans or specifications are used "as is" without qualification or collation.

2. Photographic reproduction such as the photostat, wherein master specifications and drawings may be laid out in specific groupings together with typed data of particular orders.

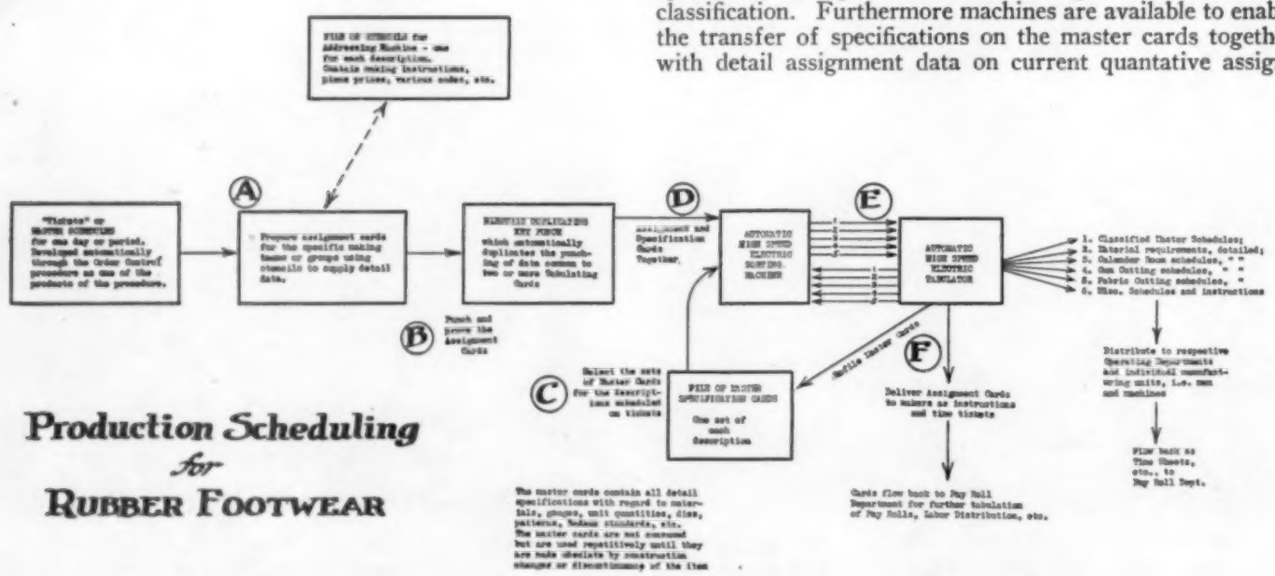
3. Stencils for addressing machines or mimeograph machines. This method has some degree of flexibility by means of selecting devices built into some machines of this type.

4. Multigraph compotype mats which enable not only the printing of specifications but also the printing of variable data at the same time, both at high speed where multiple copies are desired.

5. Linotype slugs and electroplates for use with small printing presses such as the multicolor or the multigraph. This method also permits of printing variable data at the time the specifications are reproduced.

6. Type combinations in ticketograph machines. These machines have the characteristic of containing from fourteen to four hundred combinations of type permanently set up, any one of which may be brought into position for use by merely pressing one key. Simple means are provided for changing type when specifications are changed. This machine was designed for a coupon system but has many possibilities for use in production control.

7. Tabulating machine cards, which not only enable mechanical reproduction of the specifications at extremely high speeds but also provide unlimited scope for collation and classification. Furthermore machines are available to enable the transfer of specifications on the master cards together with detail assignment data on current quantative assign-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Refile Master Cards
1. Classified Master Schedules;
2. Material requirements, detailed;
3. Calender Room schedules, " "
4. Gum Cutting schedules, " "
5. Fabric Cutting schedules, " "
6. Misc. Schedules and instructions
Distribute to respective Operating Departments and individual manufacturing units, i.e. men and machines
FLOW back as Time Sheets, etc., to Pay Roll Dept.
Deliver Assignment Cards to makers as instructions and time tickets
Cards flow back to Pay Roll Department for further tabulation of Pay Rolls, Labor Distribution, etc.

Production Scheduling for RUBBER FOOTWEAR

ment cards to a third set of cards. This tieing up of standard specification data with detail schedule data on one set of cards enables the automatic machine development of detail schedules, instructions, time tickets, requisitions, move tickets, and so on. The card method also permits the building in of self contained controls on accuracy and provides for guarding against missing cards of incomplete specifications.

Rubber footwear manufacturing, it is generally agreed among engineers who have had contact with it, presents the most difficult problem of production control known to industry. Aside from the ordinary hazards of compounding and vulcanizing common to all rubber manufacturing, footwear has the infinite variety of product to contend with, last capacity, variety of hand labor skilled in particular branches, the number of operations, all of which necessitate complete scheduling and identification of work assigned to individual operators.

Master Specification Cards

The specifications for each shoe are recorded on the master specification sheet. There is one line for each part, giving details regarding material, the die or pattern for cutting it, time elements, means of transportation, piece prices, departments involved, making section numbers, vulcanizing data, and packing data.

For each part and for each item of material a tabulating card is prepared on which is punched all specification data for that part or material. Once these cards are checked they become a *permanent specification file* until a particular specification is changed when the old card is removed and a new one substituted. When reproduced mechanically there is no possibility of error, whereas the old system of hand copying always had that possibility present. In addition to the cards for the parts and materials, addressing machine stencils are prepared for making instructions and specifications. All of the foundation work of setting up files of cards and plates together with securing supplies of all the forms involved, must be complete before any scheduling can be attempted by this method, it cannot be installed and operated piecemeal.

In operation the system starts with an order control procedure which has been discussed in previous issues of THE RUBBER AGE. For the assignments scheduled on the "ticket," assignment cards are prepared by means of the addressing machine stencils, the data printed on the assignment cards by the stencils is also recorded on the same cards in the punched holes. These cards are eventually sent out to the makers as assignments of work and maker's time tickets. Before this, however, they are used to tabulate various classified schedules for last distribution men, foremen, supervisors, vulcanizing department, inspector's check sheets, and packing check sheets.

Assignment Cards

Using the assignment cards as authority and reference, the specification master cards for the various footwear items scheduled, are selected from the files. By means of an automatic duplicating punch in a very simple operation, the specification identification factors from the specification cards B is combined with the assignment or detail schedule data from the assignment cards A, onto a third set of cards C.

The master specification cards together with the "C" cards are run through the sorting and tabulating machines several times to produce detail instructions, schedules, and time tickets, for all of the production centres and individual operations. The sheets and tickets are prepared and printed in such a manner that they become the data flowing back to the payroll and cost departments supplied accurately. Where the same data is to be used in duplicate copies the tabulator printer can be equipped with a hektograph ribbon so that the form can be reproduced on ditto.

In the manufacture of tires it is possible not only to plan completely every operation, but also to provide controls on materials in process to prevent waste due to drying up of stock; also to provide the payroll and cost departments with data required by them, in many cases fully extended ready for use.

System Applicable to Tire Factories

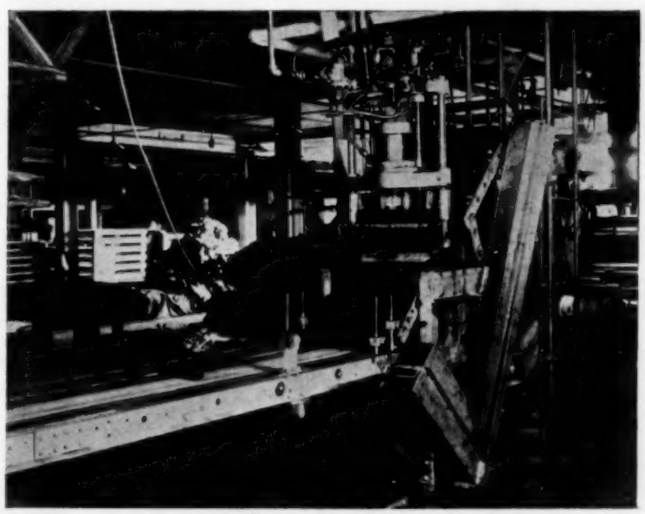
The method for tires is much more simple than that for footwear, but basically the same principles are employed. Punched cards are prepared for each part and for each item of material entering into the manufacture of the tire. Tags which are ordinarily used in tire manufacturing for identification of products in process and for instructions are employed as the vehicle in this system. The data to be printed on the tags is set up in type in ticketograph machines or set up in compotype on mats for use in the multigraph machine with a cross reference code on both the card which prints the schedules and the type combinations which print the tags.

Production planning and control for tire manufacturing needs to be closely tied up with sales analysis for companies selling direct, and with branch inventory and merchandising control for companies distributing through branches.

In attempting to apply machines to paper work, much better results are accomplished if the executive will forget what he knows about doing the job by hand. First determine the specific results desired, then design the simplest method which the machine can handle. In all probability it will be quite different from any conceivable hand method for securing the same results.

Black Rock Tread Cutter

A NEW tread cutter, introduced as model 4KC by the Black Rock Manufacturing Company, Bridgeport, Conn., will automatically skive cut treads to length as rapidly as they are received from the calender or tuber without festooning or looping. The guillotine blade which does the cutting is actuated by a unique method of releasing compressed air, driving the blade at a high rate



of speed through the stock. The air pressure, which is controlled by a pressure regulating valve, ranges from 60 pounds to 100 pounds per square inch, depending upon the size and nature of the stock.

A conveyor and take-off can be furnished with the tread cutter if desired. The illustration shows an installation in one of the large Akron tire plants.

Toy Balloons *by the* Million

Pictures of One of the World's Largest Toy Balloon Plants
The Barr Rubber Products Company, Sandusky, Ohio

1A Assembling
2A Finishing Department
3A Section of Dip Room
4A Section of Molded Goods
5A Section of Mill Room

1 Section of Office
2 Executive Office
3 Section of Shipping Room
4 Testing Room
5 Section of Boiler Room

1B Printing Department
2B Section of Packing Room
3B Section of Form Room
4B Section of Ring Rolling
5B Section of Mixing Room

Tire Production Activity in South America

Sudden Interest in Latin America as a New Field for Rubber Manufacturing Plants is the Result of Its Growing Potentialities as a Tire Market—French, Italian and American Companies Will Build Factories

By HARRY W. NEWMAN

Rubber Division, United States Department of Commerce

DURING the past few years the world has witnessed many changes within the rubber tire industry. Expansion has taken place in almost every direction, but it has been the case of the survival of the fittest. The establishment of new independent corporations has been practically negligible. The stronger companies have absorbed or merged with many of the weak concerns, whereas financial reorganization has been apparent in almost every unit.

Those companies which have been able to survive the economic depression following the World War and the inflation emanating from British restrictions have enlarged their present establishments, have erected branch factories and warehouses at strategic points, and have established foreign subsidiaries where economic contingencies, such as customs barriers, made it necessary, and where progress and competition have become essential in the visualization of their future activity.

So far the South American Continent has been immune from this universal organization and expansion, but early in 1929 when representatives of the Michelin Company of France sought sites in Argentina and Brazil, it electrified the rubber industry and immediately created a race to that area. The future plans of Michelin are unknown, but a desirable tract of land has been purchased at Sao Paulo, Brazil, adjoining the assembly plant of the General Motors Corporation, and a site in Argentina has also been obtained.

Within a few months after the activity of Michelin, the Goodyear Tire and Rubber Export Company, of Akron, purchased a factory site at La Plata, Argentina, near Buenos Aires, with the immediate plans to erect a plant to be valued at more than $7,000,000. At Quilmes, a suburb of Buenos Aires, the International B. F. Goodrich Rubber Company, of Akron, has recently negotiated for a site in order to establish a factory which will ultimately employ about 1,200 men.

Count Pirelli, the Italian manufacturer and president of the International Chamber of Commerce, on the occasion of a recent visit to Brazil, announced in a speech in Sao Paulo that it was his intention to manufacture tires, copper wire, and copper cable in Sao Paulo in the near future.

This sudden attention to the South American Continent all indicates that tire manufacturers look upon this area as potential fields for the expansion of the tire trade. This recent impetus is not of the impulse. Tire manufacturers for some time have known that as the principal Latin American countries become industrialized, the local production of tires would sooner or later materialize. Their erstwhile lack of activity was not due to indifference. They realized fully that up until now it was almost impossible for native ingenuity and capital to consummate tire production on a large, commercial scale. They sat back and waited for the other fellow to make the first move. They preferred to continue their present methods of serving the market by the manufacture of tires at the home plants and exporting to the field of consumption. This method was more economic in that it aided domestic labor, not only at the source of production but in the transportation at home by rail and the shipment by ocean-going vessels to the foreign market. Furthermore, capital benefited at every angle.

But as soon as one company made the initial step in South America and would receive the benefits of a local factory with its peculiar economic advantages, the com-

TIRE EXPORTS TO SOUTH AMERICA

Country of destination	United States			United Kingdom			France			Canada			Grand Total		
	1927	1928	9 months 1929	1927	1928	9 months 1929	1927	1928	9 months 1929	1927	1928	9 months 1929	1927	1928	9 months 1929
Argentina	305,114	223,010	226,069	64,050	59,656	60,162	63,020	41,190	23,060	112,386	172,610	193,146	605,020	554,466	546,746
Bolivia	2,023	1,682	1,733	139	45	230	.....	.....	.....	292	383	753	2,464	2,110	2,716
Brazil	157,207	140,209	134,372	33,518	27,753	24,781	103,455	46,810	13,660	99,325	139,927	127,803	410,385	405,134	325,725
Chile	30,830	31,580	39,194	10,761	8,243	4,849	13,245	8,770	3,640	10,634	16,805	20,619	68,960	65,398	68,302
Colombia	27,866	38,996	26,292	1,585	818	116	6,045	655	400	5,424	8,753	9,950	41,730	49,222	36,758
Ecuador	3,289	4,000	2,818	267	462	178	565	470	410	474	340	192	4,595	5,272	3,598
British Guiana	195	26	101	1,148	1,016	556	.....	.....	.....	2,143	1,978	1,449	3,486	3,020	2,106
Surinam	187	389	61	84	43	42	.....	.....	.....	28	70	24	299	502	127
French Guiana	85	26	4	.....	.....	.....	235	235	150	48	62	65	368	323	223
Paraguay	3,677	1,277	880	116	670	160	.....	.....	150	887	653	295	4,680	2,600	1,485
Peru	19,954	18,508	12,101	7,602	4,530	2,354	3,635	2,390	4,360	7,595	11,622	9,895	39,336	37,050	28,710
Uruguay	33,431	34,557	25,625	7,874	10,135	6,907	11,475	7,125	3,330	16,804	32,702	7,324	71,584	84,519	43,186
Venezuela	26,760	21,713	17,998	2,648	2,968	1,507	180	3,465	1,780	11,103	16,884	10,710	40,691	45,030	31,995
Total	610,618	515,973	487,248	129,792	116,339	101,842	201,855	111,110	50,940	267,143	402,789	382,225	1,293,598	1,254,646	1,091,677

*Not separately enumerated.

NOTE: Germany exported 30,297 automobile casings to Argentina in 1927; 25,117 to Argentina in 1928; and 26,049 to Argentina, 5,120 to Brazil, 2,744 to Chile and 1,949 to Uruguay during the first nine months of 1929; Italy supplied 60,450 casings to Argentina in 1927; 58,020 in 1928, and 44,309 casings for the first 6 months of 1929; to Brazil, shipments from Italy totaled 16,880 casings in 1927, 50,435 in 1928, and 25,109 for the first 6 months of the current year; Italian exports of tires to the other South American countries were relatively small and are not available.

petitive companies were alert. The race is lively. Who will be the first to manufacture tires in South America? Within a short time Argentina and Brazil are to become an integral part of the world rubber-tire industry.

The manufacture of tires in South America has not been wholly neglected. A small plant at Para, Brazil, is owned and operated by a Brazilian and in spite of its limited resources, it turns out a fairly good tire with a production at present averaging about ten a day. The government of the State has decided upon the exclusive use of the locally-made tires on all official automobiles. With this encouragement the proprietor contemplates an increase in production and is in negotiation with United States manufacturers of up-to-date tire machinery. This plant, however, will never figure conspicuously in local con-

American Automobiles Parked on the Beach Drive at Montevideo, Uruguay

sumption owing to the fact that it is remote from the center of consumption. The center of the greatest Brazilian tire consumption is to the south in the Federal District of Rio de Janeiro and in the States of Sao Paulo and Rio Grande do Sul. Para, a distance of 2,142 miles from Rio de Janeiro, is not connected by rail and is reached only by coastal vessels. The only advantage of production at that point is the fact that it is at the base of the crude-rubber supply of the Amazon Valley.

Until 1925 tires and inner tubes were manufactured by the Cia. Brasileira de Artefactos de Borracha, of Rio de Janeiro. Prices were considerably below those of the imported tires, but the quality was reported to be quite inferior. With the introduction of the balloon tire, the manufacture of which the factory was unable to accomplish, the company ceased to function.

Tires and tubes on a small scale are manufactured in Uruguay. The company is known as "La Compania Uruguaya de Camaras y Cubiertas" and is located at Paysandu on the Parana River, 298 miles above Montevideo.

Tires have also been produced in Argentina, but at the present time all production has been suspended. During the World War the manufacture was begun by the Clark Tire & Rubber Company, Ltd., of Buenos Aires, a British concern, but after the war the local product was unable to compete with the superior foreign-made tires, so the venture was abandoned. The Pirelli concern of Italy has at one time manufactured solid tires and carriage tiring at its cable plant in Buenos Aires, but this industry has been defunct for some time.

Argentina with its 310,800 motor vehicles is the largest country at present which is supplied wholly by foreign-made tires. The market is now capable of absorbing 845,200 automobile casings annually, a market slightly less than the consumption of Germany.

A manufacturer going into Argentina is not only studying the potentialities of the Argentine market but those of Uruguay and Paraguay, which are part of an economic area known as the River Plate District. Uruguay, with the progressive capital of Montevideo, has at present an annual tire consumption of about 114,700. Paraguay, although for some time to come, will remain a minor outlet, yet its possibilities should not be overlooked and today it offers profits to the enterprising exporter.

The following table will show the increased registration of motor vehicles in the three countries of the River Plate Area.

Motor-Vehicle Registration in the River Plate

	January 1926	January 1927	January 1928	January 1929
	Number	Number	Number	Number
Argentina	178,050	222,610	266,030	310,725
Uruguay	23,600	30,060	34,575	40,420
Paraguay	730	711	1,018	1,500
Total	202,380	253,381	301,623	352,725

At the beginning of 1925 there were 146,689 motor vehicles in the River Plate area and at 1929, 352,725—an increase within four years of 140 per cent. If this rate of increase continues for another four years, this area will have on January 1, 1934, 881,000 motor vehicles or the present capacity of Germany, Poland, Austria, Hungary, Italy, Switzerland, and Russia combined.

On January 1, 1924, there were 28,000 vehicles in Brazil and on January 1, 1929, 165,200—an increase of 490 per cent within four years. By July 1, 1929, registration had increased to more than 181,500. The estimated

Square in Sao Paulo, Brazil, Devoted Exclusively to the Parking of Automobiles

tire consumption for 1929 at the beginning of the year was placed around 773,200.

Although Brazil is the home of wild rubber with hundreds of acres untouched, the future tire manufacturers of Argentina are planning to use plantation rubber from the Middle East. The shrinkage of wild rubber which is experienced in the fabrication of rubber goods would not prove advantageous to tire manufacturers. Furthermore, it is declared that rubber may be shipped from New York to Buenos Aires at less cost than from the Amazon Valley.

New rubber enterprises abroad will ultimately bring returns to the American capital which is and will be invested. But the greatest loss to the home industry will be felt by labor. This in one instance at least was offset. When Michelin established its English subsidiary at Stoke-on-Trent, practically the entire labor demands were met by French immigrants who have established a French industrial colony in the vicinity of the plant. And English labor which had calculated on a partial relief of its depressed conditions in this particular plant was decidedly disappointed.

Toxic Substances *in the* Rubber Industry

PART V

By P. A. DAVIS, A.B., M.A., M.D.
Assistant Medical Director, Goodyear Tire & Rubber Company

HEXAMETHYLENE-TETRAMINE $(CH_2)_6N_4$

HEXAMETHYLENE-TETRAMINE $(CH_2)_6N_4$ is a white crystalline substance occurring in rhombohedra formation. It is very soluble in water, has a sweet burning taste, is a monacid base and shows no reaction to litmus. It sublimes without decomposition under reduced pressure.

Hexamethylene-tetramine is produced by the combination of ammonia and formaldehyde. When treated with H_2SO_4, HCL or CH_2COOH it is converted into ammonia and formaldehyde. The commercial product contains some of the intermediate substances and can be purified by distilling under reduced pressure.

Hexamethylene-tetramine is known under a vast number of trade names, and is the most constant constituent in kidney and bladder remedies. For a few years it was a panacea for all ailments. Some of the most common names applied to Hexamethylene-tetramine are, Urotropin, Uritone, Formin, Methenamine, Cystogen, Aminoform, Hexamine and "Hex" in the rubber industry.

Especially Affects Skin

It was used a few years ago in vast quantities as an accelerator in the curing of rubber, but recent advances in the preparation and uses of accelerators has markedly reduced the quantities used. The cause for the discontinuance of this substance is not because it is so toxic but because other accelerators have been developed. However it is still used and causes certain disturbances especially of the skin. The chief source of the trouble is in the uncured or "green stock," or in vulcanized stock in which the sulphur is at a minimum, for when "Hex" is heated with sulphur as in the vulcanizing process it breaks down forming hydrogen sulphide, carbon disulphide and sulpho-cyanide. This reaction is complete if there is enough sulphur to satisfy the "Hex" present, if not some "Hex" is sublimed and remains on the surface of the rubber. If during the process of vulcanization the rubber becomes acid or any sulpho-acids develop there is liberated some quantities of formaldehyde and ammonia. The chemical characteristics of this compound as well as its basic constituents label it as an irritant and it is no exception to the rule. When "Hex" is present in an acid medium formaldehyde and ammonia are liberated, both being highly irritant. The fact that formaldehyde is liberated in acid reactions gave Hexamethylene-tetramine a great name as a germicide and an antiseptic drug, and it has been used for many years for such conditions as nephritis, cystitis, phelitis, infections of the nose and para-nasal sinuses, infections of the genito-urinary and intestinal tracts. I do not believe that it has fulfilled its therapeutic expectations. Large doses of 40 to 50 grams a day do not produce any perceptible influence on the physical system unless taken over periods of many days. Large doses taken into the human system where a condition of acidosis exists often produces a hematuria and a hemmorrhagic nephritis, but this is due to the local irritation produced in these organs. Blood smears made from persons who have worked in "Hex" and who have had a "Hex" dermatitis have not shown any characteristic defect. In my laboratory we have treated blood with various dilutions of Hexamethylene and the following data is tabulated. Human blood was used in these experiments.

The blood was first defibrinated and placed in a series of tubes. These were treated with solutions of Hexamethylene-tetramine in the following dilutions, 1.0%, 0.5%, 0.1%, 0.05%, 0.01%, 0.005%, 0.001%, 0.0005% and 0.0001%. Smears were made after 24 hours but no structural changes were present in the blood cells. The same dilutions after 96 hours were tested and no structural changes were present.

Another series of dilutions were made of similar strength but acidified with 1% solution of acetic acid. These were kept at 70°F for 24 hours and 96 hours and the smears made did not show any structural change in the blood cells. A series of tubes were used as a control in which the blood was not treated with any of the substances. Another series was run and the tubes placed in a hot water bath at 37.50 Centigrade. Smears made from these tubes did not show any structural change in the blood cells after being in the water bath for 1 hour and standing for 24 hours. Blood smears made from individuals who have been working with "Hex" do not show any structural changes. Blood smears made from persons who have "Hex" dermatitis have not shown any structural changes.

Eliminated by Sweating

In one case where there was a history of a Hematuria a few transitionals were present but this I do not believe was caused by any effect of the "Hex" on the blood forming organs. I have several cases where the individual has taken 15 to 30 grams a day for 3 and 4 months without showing any structural blood changes.

Hexamethylene is eliminated through the kidneys in about 80% of its original form unless a condition of Hyperchlordhydria exists. It is broken down in the acid urine in the bladder, liberating some formaldehyde, and this depends entirely on the acidity and the acid radical present. Strong acid radicals cause a greater liberation of formaldehyde than those of the weaker group, in other words inorganic acid radicals are stronger than organic acid radicals.

Hexamethylene-tetramine may be eliminated through the skin by sweating if large quantities have been taken.

Hematuria from long continued over-doses of "Hex" is due to local inflammations in the bladder and kidneys and not to any structural blood changes. I have observed persons who have been working with "Hex" in the rubber industry for many years and the only factor that causes any concern is the dermatitis that is produced and this is usually in rubber that is not vulcanized or in rubber that is vulcanized but contains very little sulphur for "Hex" when heated with sulphur reacts and produces hydrogen sulphide, carbon disulphide and a sulpho-cyanid. I have asked my colleague, Dr. J. S. Millard, to write the following description of the dermatitis that results from the use of "Hex."

Hexamethylene-tetramine is used in the rubber industry as an accelerator. It is a skin irritant and produces a dermatitis the

severity of which is dependent upon its concentration, the susceptibility of the individual, the temperature and humidity, and the reaction, acid or alkaline, of the sweat of the individual exposed to it.

The appearance of the dermatitis is that of an erythematous blush with a bluish or dusky tint. Further exposure causes the skin to become infiltrated, dry and harsh. In severe cases vesicles may be formed. A severe pruritis accompanies the dermatitis and the resulting excoriations of the skin from scratching usually become infected. The chemists tell us that hexamethylene-tetramine breaks down in an acid medium such as acid sweat, and liberates formaldehyde and possibly formic acid which are the true irritants in this substance. The dermatitis produced is not chronic and disappears in a few days after the last exposure to the substance in question.

Suggestions as to prevention and treatment are as follows:

Select dark and oily skinned workmen, preferably negroes, to work in departments where the exposure is greatest.

As vegetarians have alkaline sweat, select vegetarians for the work or advise workmen to live on a low meat diet.

Prescribe alkaline skin lotions or better still supply workmen with an ointment containing an alkali such as sodium borate to be applied to all areas of skin affected by or exposed to the hexamethylene-tetramine.

There are numerous non irritating accelerators on the market which may be substituted for hexamethylene-tetramine. To use one of these substitutes may require some experimenting and changing of existing compound formulae but this is well worth the effort.

The results of experimentation and observation shows that the only detrimental effects of "Hex" as used in the rubber industry is the dermatitis that is produced. This can be controlled by proper precautions.

Preventitive Measures

1. Place only individuals with dark oily tough skins, and who have a negative history of dermatitis, on operations using "Hex."
2. Frequent examinations, for any dermatitis or kidney and bladder irritations.
3. Keep "Hex" at a minimum concentration.
4. Use "Hex" preferably in rubber preparations that are alkaline or neutral in reaction.
5. Do not use "Hex" in acid solutions.
6. Keep working conditions as clean as possible and as cool as possible as acid perspirations stimulate a "Hex" dermatitis.
7. Spraying processes should be directed away from the individuals and done under suction ventilation.
8. Encourage workers in "Hex" to be vegetarians.
9. Substitution of other accelerators.
10. Removal of individuals with a dermatitis from contact with "Hex."

Conclusion

1. "Hex" unless taken in excessive quantities is non-toxic as a systemic poison, and especially is this true in the rubber industry where only a small amount is taken into the system daily.
2. "Hex" is a definite irritant to most skins and especially so in those individuals with acid secretions.
3. All detrimental effects of "Hex" can be controlled.
4. Persons with a "Hex" dermatitis recover very rapidly when removed from contact with the substance.
5. The intravenous injections into the human system has not produced any structural blood changes, but has produced beneficial results in certain infectious diseases. Oral administration of "Hex" has not to my knowledge produced a dermatitis, but this could be a possibility in persons with a hyper acid system.

Chondrilla in Soviet Russia

THE Soviet Rubber Trust, which supervises the entire rubber industry in Russia, has devoted considerable attention during the last year to a search among the various domestic plants for a substitute for imported rubber. The wild growths of many of the far-off parts of the Soviet Union were investigated with the result that Professor G. Bosse, of the research department of the Rubber Trust has now announced that sufficient experimental work with the *Chondrilla* plant warrants the hope that such a substitute has been found.

Chondrilla has been found in various parts of central Asia but the two species which have given the best results so far have come from the Azerbaidzhan region in Transcaucasia and the Kazakstan Republic. Extensive research and experimental work was engaged in during last year with these two species and the results proved so encouraging that the Supreme Economic Council has recently authorized the Rubber Trust to spend 3,000,000 rubles ($1,500,000) in further development work. The Trust, accordingly, is taking steps to lay out *Chondrilla* plantations on as large a scale as the appropriation will permit.

Professor Bosse expresses the belief that besides giving the Rubber Trust a substitute for imported rubber, the gathering of the latex from the *Chondrilla* will supply the native population of many of the poorest developed areas, particularly around Kazakstan, with a new trade.

Latvia Rubber Footwear Industry

AROUND the Baltic Sea, where the consumption of rubber footwear is greater than any other part of Europe, owing to the large fall of snow during the long winters, the rubber footwear industry has assumed an important position, according to a recent survey of the Department of Commerce.

Every Baltic State, with the exception of Estonia and Lithuania, manufactures galoshes, so-called rubbers, and other classes of rubber footwear for local consumption, while some figure conspicuously in the export field. In this industry the small Republic of Latvia is probably the largest individual producer, and leads in exports.

The present Republic of Latvia before the World War was the center of the former Russian rubber industry. The present industry, however, was reorganized almost entirely anew, inasmuch as the Russian factories were evacuated in 1915 and most of the machinery carried to Petrograd.

The present rubber-footwear industry of Latvia is maintained by three medium-sized plants and a very small one, together employing approximately 2,300 workers. The largest is the "Quadrat" which employs about 1,200 laborers. Several extensions have been made to the factory and further additions are planned for the immediate future.

The annual production of the country is now reputed to be in excess of 4,000,000 pairs, of which about 50 per cent is consumed locally. The growing importance of this industry is reflected in the advance of crude rubber imports—from 644 metric tons in 1927 to 1,311 tons in 1928.

The importance that Latvia has assumed in the exportation of rubber footwear is remarkable. In 1925, the country exported 303,000 kilos of rubber footwear, increasing to 794,000 kilos in 1926, and in 1928, the Republic being less than 10 years old, shipped 1,417,500 kilos—an increase of 368 per cent. The year 1929, however, may tell a different story. Exports for the first six months of 1929 total 230,000 kilos which, when compared with the 343,000 kilos exported during the corresponding period of 1928, show a decline of 33 per cent. This is probably due, however, to the severe competition coming from the Soviet Union, where production and exportations of rubber footwear have been increasing at a rapid pace. Poland since 1927 has been the most important outlet for Latvian-made rubber footwear—increasing from 45,688 kilos in 1925 to 475,875 kilos in 1928. This increase has been made in spite of a rapidly increased production and extension of the local Polish rubber-footwear industry.

The Future of Rubber in Aeronautics?

"RUBBER some day will be more widely used in airplanes than it is used today in automobiles." This is the belief of William O'Neil, president of the General Tire and Rubber Company.

To demonstrate this, Mr. O'Neil last spring selected seven young army fliers from the First Pursuit Group at Selfridge Field, Mt. Clemens, Mich., and sent them on a nation-wide air tour, the first commercial air tour of the kind ever to be made.

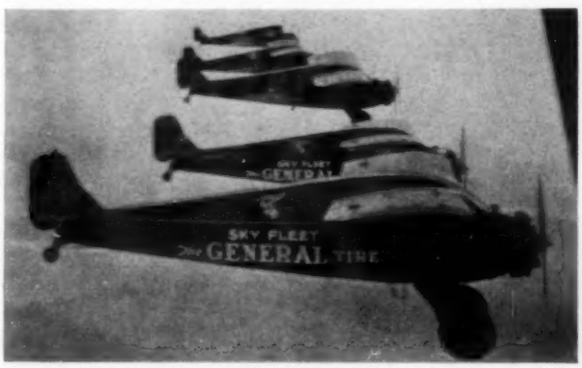
In seven three-place cabin monoplanes, they have flown over 32 states, and covered more than 20,000 air miles. During landings on all kinds of airports, tests and observations were made with a view to determining the practicability of various new aerial safety devices made of rubber. General Tire and Rubber Company engineers are now working on the results of these tests and observations.

The Personnel of the General Tire and Rubber Co. Fleet

The "Sky Fleet" originated in the mind of the manager of the aeronautical department of the General Tire and Rubber Company, Alger G. Maranville, who is widely known for his inventive contribution to aircraft and who will soon have more important developments to announce.

At Washington, D. C., President Herbert Hoover invited the pilots and fleet officials, together with Mr. O'Neil, to call on him at the White House. He chatted with them, in the executive offices, for a quarter of an hour, and smilingly expressed the wish that he might be going along on the tour.

For experimental purposes, one of the ships, that of Lieut. Giovannoli, was equipped with radio by the Western Electric Company. A seven-foot aluminum tube which extended two feet above the fuselage of his ship acted as an aerial.



The Flying Fleet in Flight

Seven of the eight planes in the fleet were operated by the General Tire and Rubber Company and the eighth was operated by the manufacturer of the ships.

The cost of gasoline for the seven planes amounted to about $10 an hour for the fleet or about $1.40 an hour for each plane. Oil for the fleet cost about $1.50 an hour or about 20 cents an hour for each ship. Hangar rental amounted to $592, or $84.58 for each ship.

Expense of making repairs to the ships en route, including all minor crack-ups and the wages of one mechanic who accompanied the fleet amounted to $17.20 an hour for the fleet, which made an average expense of about $2.50 an hour for each of the seven ships.

In estimating the amount of depreciation, it is regarded as fair to place it at 20 per cent of the cost of the ships. This is the average depreciation on planes in ordinary use for a year, but the severe service to which the planes were subjected during five months is believed equivalent to a year's ordinary use. This would make the depreciation expense for the fleet $9,000, or $1,285.75 for each ship.

Rubber Investments in Sumatra

ABOUT 40,000 hectares of land in Northern Sumatra had been planted to rubber, tobacco, tea and palm oil, by European plantation concerns by the end of 1911; by the end of 1914, 120,000 hectares; in 1928, approximately 340,000, according to the Department of Commerce. All areas now held by the European plantation concerns of North Sumatra were obtained on 75-year concessions, largely from the native Sultans, with the approval of the Government of Netherland India. The original cost of the concessions was small; and their combined annual rental and other charges connected therewith are relatively unimportant, because they were secured at a period in Sumatra's history when its potentialities had not been visualized. No laws have yet been made prescribing the terms under which the concessions or leases may be renewed nor have the annual rentals, presents, or contributions to the Sultans or other holders been determined. According to the present law, the Sultans have the authority to take back and to give to the natives part or all of the area now held by European plantation companies.

Capital investments in North Sumatra's agricultural industries have increased steadily and heavily during the last few years. In 1913 they totaled 206,975,000 florins, of which the Dutch controlled 53.18 per cent. By the end of 1928 the total had increased to 544,965,000 florins, of which the Dutch controlled 53.18 per cent. British interests followed closely with approximately 22.9 per cent, while the American interest amounted to 8.45 per cent of the total. (Florin = $0.402 at par.)

The following figures show American and other investments in Sumatran rubber and palm-oil plantations:

Foreign Capital Investments in North Sumatran Plantation Rubber and Tea, and in the Palm-Oil Industry on the East Coast of Sumatra and the East Coast of Atjeh in 1928

Nationality	Rubber *Florins*	Tea *Florins*	Palm Oil[1] *Florins*
Dutch	116,836,000	19,904,000	24,953,000
British	105,868,000	14,256,000	1,835,000
American	45,217,000	.....	.....
Franco-Belgian	41,896,000	.....	17,665,000
Swiss	3,473,000	.....	.....
Japanese	8,204,000	.....	720,000
German	3,511,000	2,288,000	2,171,000
Other	9,894,000	.....	.....
Total	334,899,000	36,448,000	47,344,000

[1]The above figures for palm oil do not include the capital investment by the Handelsvereeniging "Amsterdam." It is believed that the figures for Dutch capital for 1928 should be increased by about 10,000,000 florins. The table does not include the capital invested in the plantations on the west coast of Atjeh.

Schaphorst's CHATS *with the* ENGINEER

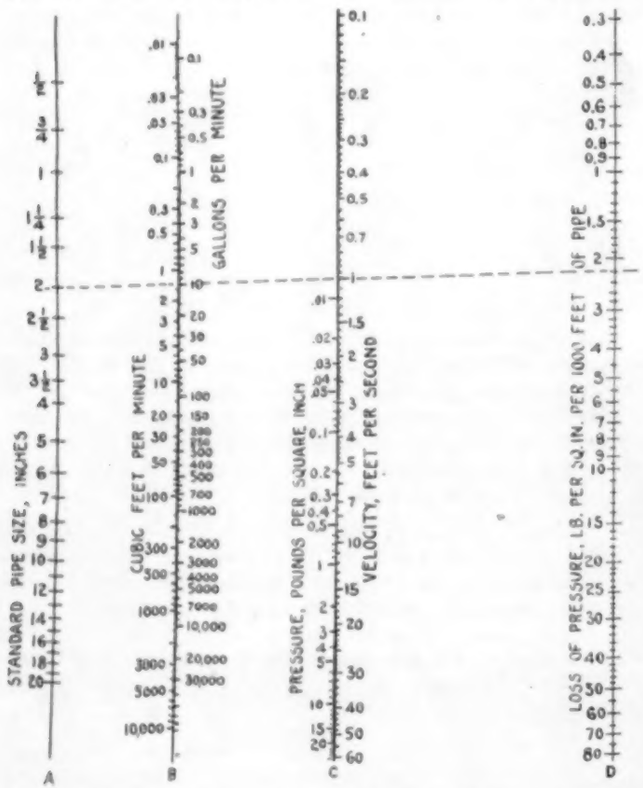
By W. F. SCHAPHORST, M.E.

A Handy and Practical Water Flow Chart

HERE is a water flow chart that is so easy to understand it hardly requires explaining. Simply lay a ruler across, as indicated by the dotted line, and your problem is solved. Thus the dotted line drawn across this chart tells us that if the pipe is 2 inches in diameter (Column A), and if the velocity of water is 1 ft. per sec., (Column C), you are getting 10 gals. of water per minute (Column B), and the loss of pressure per 1,000 ft. of pipe is 2.2 lbs. per sq. in.

At the same time, Column B in itself is a handy and complete conversion scale. It shows you that 10 gals. per min. is equivalent to about 1.4 cu. ft. per min.

Similarly Column C converts water pressure in pounds per sq. in. into velocity in feet per second. The pressures



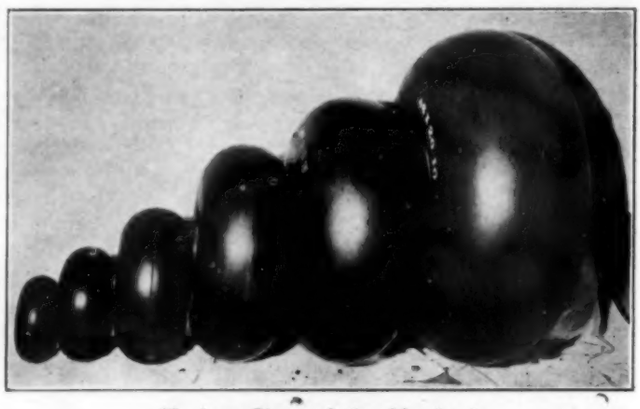
and velocities in Column C are computed from the well known falling body formula: "Velocity in ft. per second equals the square root of 64 times the head of water in feet." Thus if you have a head of water sufficiently high to create a pressure of 10 lbs. per sq. in., the velocity of flow due to that pressure is 38.4 ft. per second which may be found opposite the 10 in Column C. To find the "head of water," divide the pressure by 0.434.

It is obvious that this chart will compute any ordinary problem because any straight line across the chart is a solution to one particular set of conditions. The number of variations is infinite.

The Goodyear Airwheel

THE rubber shock absorber cord or rubber disc landing gear had almost become traditional in aircraft design, when the oleo-pneumatic strut was introduced, and rapidly began to replace the rubber product. But the rubber industry, true to its traditions, has bounced right back with the new Goodyear Airwheel, a super-balloon tire carrying a low air pressure. As a consequence, it may be said that now for the first time the airplane has a tire of its own.

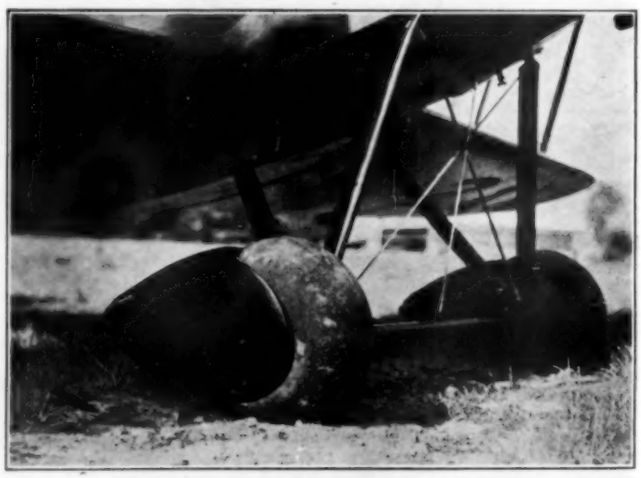
The indications are that this new Airwheel possesses many advantages. All the usual wheel failures are eliminated for the simple reason that there are no wheels, the air-



Various Sizes of the Airwheel

wheel and its tube mounting directly on the hub. The need for all other forms of shock absorbers is eliminated, the Airwheel functioning as the shock absorber. It gives a more perfect streamline shape, with consequent reduction of air resistance, and also weighs less with added strength.

The Airwheel gives extreme cushioning effect in landing and taxiing, and makes possible safe landings, either planned or forced, in all sorts of fields and weather conditions. It also makes possible quicker take-offs and shorter landings, with less wear and tear on the plane. On the take-off with Airwheels, there is no "hopping," as they provide continuous ground contact until the plane goes into the air. Landings with even one wheel deflated are practical, and



The Airwheel as Mounted on a Plane

there is none of the violent rebound which an imperfect landing might otherwise cause.

Internal hub brakes may be applied, with quicker shorter brake action. Air pressures used range from 6 to 21 lbs., depending on size and loading of the plane. Front wheel sizes now available are 22"x10", 30"x13", 37"x16" and 46"x20". Tail wheel sizes are 12"x15", 16"x7" and 22"x10".

Quality Control of Materials

(*Continued from page* 193)

in vulcanization of the product are too well known to need description here. Steam engineering has furnished us with adequate control and recording instruments for our vulcanizing equipment, and after the initial determination of the correct cure the remaining steps are purely mechanical.

The success of all these raw material and processing controls may be measured in the quality or serviceabiilty of the finished product. This measure is obtained by further tests in the service laboratory described above. At regular intervals samples of the finished product are taken for analysis. This analysis usually covers both constructional and stock features. Both must meet specifications for finished product issued to the production departments. In the service laboratory sections of all products are analysed for tensile, modulus, elongation, free sulphur, ageing properties, both natural and artificial, or any other tests which may be specified. The results are compared with the standards and presented to the production management for their guidance in further improving the quality of the product.

These agencies for improved control of materials before, during, and after processing would seem to be sufficient to produce satisfactorily. Like many other technical problems, on the other hand, we have only scratched the surface. We need more information about our raw materials—especially rubber, as it comes to our plants; more accurate measuring and recording instruments; a better conception of the action of rubber and compounds during processing, and proper methods of evaluating the service we may reasonably expect of the product.

Sheet Rubber From Latex

AN INVENTOR in British Malaya has been experimenting with a new process for preparing sheet rubber from liquid latex, according to a report sent to the Department of Commerce.

In this process, a special coagulent is added to the diluted latex which is then spread in a thin layer of a sheet of glass. It is allowed to coagulate slowly and results in a thin, semi-transparent sheet of high tensile strength and elasticity. The inventor claims that this rubber has exceptional keeping qualities and states that he has samples two years old which are in nearly as good condition as newly prepared sheet rubber.

The Rubber Division of the Department of Commerce has not made public the name of the inventor, but interested rubber manufacturers may secure both his name and address upon application to the Department, together with a sample cutting from a sheet originally 60 by 40 inches which was prepared from 90 ounces of latex to which 30 ounces of water and coagulent had been added.

The National Waste Review

THE National Association of Waste Material Dealers, Inc., is planning to issue beginning January, 1930, a monthly magazine which will combine all its present publications including the Salvage and Reclamation Bulletin. The new magazine will be approximately sixty pages and will be known as the *National Waste Review*. It will be edited under the direction of Charles M. Haskins, secretary of the Association and will be issued from the offices of the Association in the Times Building, New York City. It is planned to devote some pages of each issue to the subject of scrap rubber.

What Price Tire Advertising?

EDITOR'S NOTE: The following letter received from an advertising agent long connected with the tire industry, presents a controversial question which offers considerable opportunity for debate. If the readers of THE RUBBER AGE, and particularly those in the advertising fraternity care to take issue with Mr. Bolam or concur in his remarks, it will be glad to give publicity to a few of the replies.

To the Editor of THE RUBBER AGE:

MILLIONS of dollars have been spent in the advertising of specific brands of tires, but has this tremendous expenditure really produced the tangible result of wedding the average car owner to the exclusive purchase of this or that particular make of tire to the exclusion of all competitors?

Evidence gathered during several years over a wide territory appears to indicate the contrary. Inspection of many hundreds of parked cars reveals the somewhat astonishing condition that outside of new cars and those obviously still carrying their factory equipment, only a small minority appeared to have all four shoes alike while very many had a different make of tire on each wheel. Drivers of both old and new cars, when unexpectedly asked to name the brand of tire on their car, often proved entirely wrong in the guesses. The majority of owners of good class cars seemed to be agreed that any one of the leaders was "good enough" but the real enthusiastic boosters of any one brand were in a mighty small minority.

The answer to the question "Why do we buy new tires?" in the last analysis, is "Because we have to" and usually at the last moment. In many cases the old tire "goes West" with a big bang before the car owner realizes his need. From day to day he prays that the old shoe will hang on just a little while longer but the end often finds him miles from home. The next question is "Where do we buy new tires?" And here the answer varies because the city motorist's buying problem is quite different from that of his country cousin. The city owner if he so desires, usually finds his favorite tire within a few blocks. But that he does not always do so is proved by the fact that many of my investigations have been made in crowded city districts. He is too often influenced by his garage man or favorite service station and is inclined to take what is offered at the immediate moment.

About one half of our population is still rural or semi-rural. I do not know the proportion of town to country motorists but I will hazard a bet that for every two tires worn out on city streets at least three are discarded by the country owner. And yet, outside of the mail order houses, the country dweller is practically ignored by the tire manufacturer. National advertising, with any real driving sales effort back of it, reaches only a comparatively small percentage of this market whereas the ubiquitous mail order advertising reaches out to the smallest farm or R. F. D. route. Of what real sales value are fleet tours by either automobiles or airplanes or the other more modern advertising stunts?

It would be a thankless task to analyze the ideas behind present day tire advertising. After all, there are millions of cars to be re-tired every year and probably every manufacturer gets his share of the business. But does he get it because, or in spite of, his advertising? I have no axe to grind, but I would like to know if I am right, or merely dreaming. Is there an answer?

(Signed) AUSTEN BOLAM.

Treat Your LINERS in Your Own Plant

with

DAMASCUS LINER COMPOUND

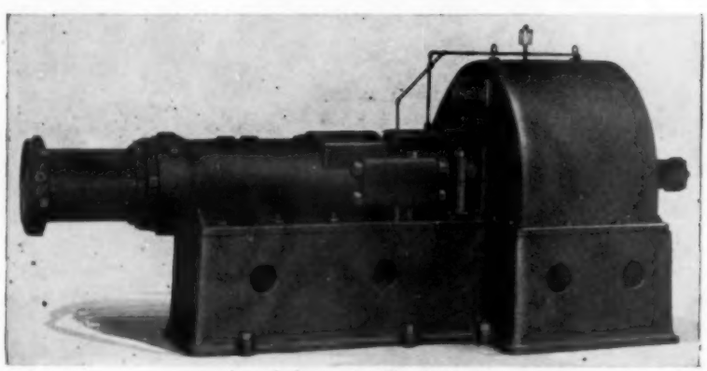
Investigation Invited

DAMASCUS MANUFACTURING CORP.
9501 CASSIUS AVENUE
CLEVELAND, OHIO

New Jersey Territory: H. M. ROYAL, Inc., Trenton

Modern Equipment for the Reclaimed Rubber Manufacturer

Refiners
Crackers
Strainers
Reduction Geared Drives



An Adamson Strainer

ADAMSON rubber reclaiming machinery is ultra-modern—each machine is designed to meet the specific demands of the job for which it is intended. We will be pleased to quote you on refiners, crackers, strainers and reduction gear drives.

The ADAMSON MACHINE CO.

AKRON, OHIO

RUSSELL B. KOONTZ, *Pres., Gen. Mgr.*

EDITORIAL COMMENT

Valuable Government Aid

INVALUABLE assistance rendered to American business both in this country and abroad is revealed in the annual report of the Bureau of Foreign and Domestic Commerce for the last fiscal year recently made public. In this 57-page document is cited an almost endless variety of achievements looking to the promotion of American commerce and the elimination of inefficient trade practices. During the greater part of the period covered by the report, the Bureau was under the direction of Dr. Julius Klein, now Assistant Secretary of Commerce. The present director, W. L. Cooper, was until his appointment last month, Commercial Attache at London.

The ramifications of the Bureau's work in connection with American trade in foreign countries are such that definite evaluation is difficult. Besides furnishing information as to where trade opportunities exist, cooperating in closing sales, and aiding in obtaining satisfactory agents, representatives of the Bureau keep close watch on tariff changes, credit conditions, violation of patents, copyrights and trade-marks, etc. During the course of a year it is probable that the total accruing to American exporters in new business gained and money saved as a result of the activities of the Bureau runs into many millions.

Specific instances of results obtained which were voluntarily reported to the Bureau by individuals and firms engaged in foreign trade range from the sale of airplanes in Chile to motorcycles in Egypt; from baking equipment in New Zealand to soda fountains in Brazil; and from fountain pens in Austria to textiles in Batavia. In aiding in the sales of American automobiles the Bureau's foreign offices were especially active. Sales of approximately $250,000 worth of motor vehicles in Brazil were effected through the cooperation of the Rio de Janeiro office while the Constantinople office secured for an American manufacturer an agent who in three years contracted for more than $1,000,000 worth of machines. In the chemical field, results obtained were equally outstanding, one New York exporter being assisted in obtaining a contract in Germany involving shipments in excess of $3,000,000.

The rubber industry has also profited by this service on the part of the Department of Commerce and through the fine work of the Rubber Division of the Department, under the guidance of its chief, E. G. Holt, a great deal of material assistance has been available to the different export divisions of the individual companies in the industry. More material aid is undoubtedly possible with closer cooperation. The Rubber Division is doing an extremely worthy job and should have the cordial and unstinted support of the entire rubber industry.

Crude Rubber and Securities

CRUDE RUBBER, as a commodity of trade, continues to uphold its reputation for "erraticness" on the market exchanges. Technically rubber presents a sound investment. Statistically it is in a favorable position. There is little reason for 17-cent rubber at the present time and the only apparent excuse can be seen in the general declines in the securities market on the Stock Exchange during the last few weeks. Despite the rising stocks in London and Liverpool and the increased imports into the United States, stocks on hand and afloat are not abnormal if the expected renewal to capacity production in the tire factories, anticipatory to the spring dating demands, is made a fact.

The fault at present in connection with the price of rubber lies not with the position of rubber itself. It has become the innocent victim of the general debility of the entire Stock Exchange list, including the stocks of rubber manufacturing companies. The fault lies with the brokerage houses that try to serve too many commodity market exchanges at the same time,—they hold too many special accounts in cotton, sugar, coffee, produce, hides, rubber, etc. Margins must be protected, brokers' loans must be met and the holders of crude rubber and other commodity raw materials must hypothecate,—hence a wild abnormal selling in the commodity exchanges. Too often, therefore, has rubber fallen a victim on such sacrificial altars, when, in itself, its position was secure.

The whole history of the last half year of the domestic industry would refute the present value of shares of the leading rubber manufacturing companies. The far-sighted investing public will hold fast to their rubber shares and in turn, buy more. The industry is fundamentally sound and cannot help but produce a substantial return on investments at present levels. The raw commodity also presents an attractive buy at present levels and the industry can only have itself to blame if near future requirements are not procured at the prevailing advantageous prices.

The RUBBER AGE

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

BETTER RUBBER
from these
BETTER CHEMICALS

Our resources, manufacturing control and ample warehousing facilities assure our customers uniformly dependable products and prompt deliveries.

D. P. G.	—One of the most widely used accelerators; proven by eight years general use by the trade.
D. O. T. G.	—In certain compounds is cheaper than D. P. G. per unit of acceleration.
Accelerator No. 49	—A disubstituted guanidine—in strength midway between D. P. G. and D. O. T. G.
Rubber Sulphur	—Carefully prepared to meet your specifications—air floated and bolted through silk.

Information on complete line upon request.

Industrial Chemicals Division

AMERICAN CYANAMID CO.

535 Fifth Avenue New York

COOPER GUARANTEED PRODUCT

QUALITY CHEMICALS
for the
RUBBER INDUSTRY
Stocked at Akron, Ohio.

Aniline Oil
Pine Tars
Co-Flux
Gasoline
Soap Bark
Palm Oils
Hardwood Pitch

R. A. SPERRY
Akron Manager
134 E. Miller Ave.
Phone
Main 1898

Red Oxide
Benzol
Toluol
Sol. Naphtha
Crude Sol. Naphtha
Naphthalene
Cresylic Acid

WILLIAM COOPER & NEPHEWS
INCORPORATED
1909-25 CLIFTON AVE. CHICAGO, ILL.

SPECIAL SOFTENERS

—Better Working Properties before Cure
—Improved Vulcanized Quality
—Lower Raw Materials Cost

TASCO ASPHALT COMPANY

Akron Representative
The F. F. Myers Co.
Akron Savings & Loan Bldg.

HOME OFFICE
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Newark, N. J.

Trenton Representative
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289 North Willow St.

Warehouse Deliveries from All Agencies

NEWS of the INDUSTRY

Financial—Business
Building Operations
Personals
New Products

PACIFIC GOODRICH WILL EXPAND COAST FACTORY

The construction of an additional warehouse at Los Angeles and the expenditure of about $250,800 on plant improvements by the Pacific Goodrich Rubber Company is announced by T. G. Graham, first vice-president. The company will make Los Angeles a distributing centre for its recently acquired Hood lines and also will transfer more of its footwear business to Los Angeles.

Mr. Graham expressed optimism over the business outlook for 1930. More than 1,500,000 tires have been turned out by the Los Angeles factory of the Goodrich company this year, he stated.

SHERBONDI RUBBER FIRM COMMENCES OPERATIONS

The Sherbondi Rubber Company, Norwalk, Cal., started operations on October 28 with 25 employees and is gradually increasing its force to put its plant at capacity. The company is to manufacture beach balls, hard rubber toilet seats and mechanical rubber goods for the oil fields.

Mitchell Carter of Los Angeles will be associated with the firm as superintendent of the manufacturing department. A considerable amount of new machinery and equipment has been installed in the old tire factory at Norwalk, and the company reports that it has orders already in hand for its first few months' production.

PENNSYLVANIA DEALERS VISIT COMPANY FACTORY

The 1930 line of tires offered by the Pennsylvania Rubber Company is now being shown to dealers at the factory at Jeannette, Pa., contingents from all parts of the country having been company guests during the present month. A series of conferences were held with the dealer groups with W. O. Rutherford, president, in charge.

The new series of tires includes the Nonpareil, an eight-ply de luxe; the Advanced six, which is said to provide greater steering ease and comfort; the Standard four, made in all-black and black tread with white side walls; and the Gold Standard truck-bus, the largest and strongest commercial tire the company has ever built.

To Expand Hood Plant

The Hood Rubber Company, recently acquired by the B. F. Goodrich Company, has asked for bids on a general contract for a two-story addition to its mill at Watertown, Mass., equipped primarily as a vulcanizing plant. The addition is estimated to cost $50,000, including machinery.

10,000,000 Sears-Roebuck Tires

The 10,000,000th All-State tire was manufactured for Sears, Roebuck & Company, leading mail order house, on October 31. Production of these tires began June 1, 1926, and the 10,000,000th casing was, therefore, reached in only three years and five months. During the peak production period reached last May and June, output reached an average of 28,000 tires daily.

U. S. Leads in Tire Exports

During the first nine months of 1929, the United States exported 2,313,530 automobile casings, as compared with 1,407,851 casings exported by Canada, 1,140,900 by France and 919,802 by the United Kingdom. The total number of casings exported by these four countries in the period amounted to 5,782,083, which is believed to be about 80 per cent of the total exports from all countries of the world.

Smail Not to Leave R. S. L.

E. J. Smail, Jr., vice-president and sales manager of the Rubber Service Laboratories Company, Akron, O., will not retire from that organization next year, as stated in the October 25th issue of THE RUBBER AGE. Mr. Smail is a member of the board of directors of Air Services, Inc., Akron, O., and was elected treasurer of that body last month, but he will not allow these activities to interfere with his work with the Rubber Service Laboratories Company.

G. E. Engineers Entertained

The regular November meeting of engineers from several of the General Electric Company plants in the East, usually held at the Bridgeport factory, was transferred on Friday evening, November 15, to the laboratory of the R. T. Vanderbilt Company at East Norwalk, Conn., at the invitation of Dr. A. A. Somerville. More than 40 General Electric engineers, headed by E. N. Schwartz of the Bridgeport plant, were on hand to enjoy a buffet supper and a short talk by Dr. Somerville on the ABC of rubber compounding and testing. Few of the guests were connected with the rubber division of the General Electric Company, and the inspection of the laboratory and the talk on compounding proved of more than usual interest.

U. S. RUBBER TEST FLEET TRAVELING IN INDIANA

The United States Rubber Company's test fleet of eleven cars left Detroit early this month and has been making its way down through Indiana with stops at Fort Wayne, Marion, Muncie, Anderson and Indianapolis. The fleet was scheduled to visit the latter city on November 7 and 8 before leaving for Terre Haute on its itinerary through Memphis, Little Rock, Dallas, Fort Worth and El Paso to the winter test grounds at Phoenix, Ariz.

More than ten years of traveling with 1,000,000 miles each year is the mileage record that the fleet has made for the United States Rubber Company in testing the endurance qualities of tires. The fleet is in charge of William Thompson, director of road tests for the company, and spends the summer months on testing grounds in Michigan.

SOUTHERN TIRE & RUBBER EQUIPMENT IS AUCTIONED

All machinery and equipment of the Southern Tire & Rubber Company, Augusta, Ga., was sold at public auction on the afternoon of November 7, with the Industrial Plants Corporation, 25 Church Street, New York City, acting as auctioneers. The sale was conducted on the premises of the former tire factory, all items being offered in single lots, and everything was disposed of.

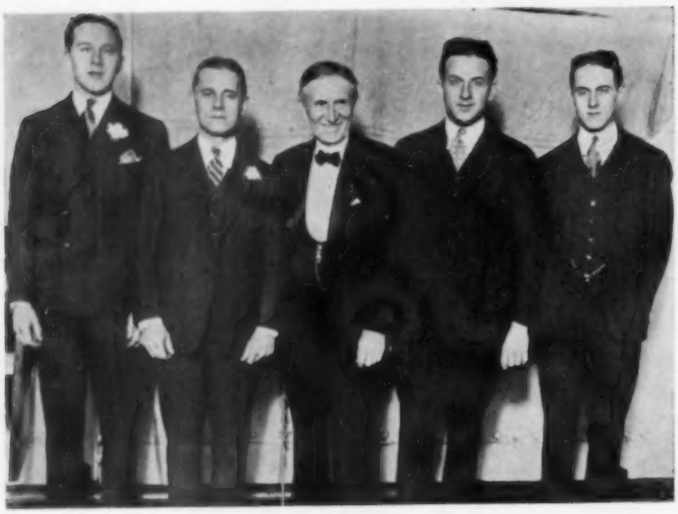
The equipment included three tire vulcanizers, 20 watch case heaters, 200 assorted tire molds and cores, air compressors, fabric cutters, tire building machines, calenders, tubers, Banbury mixers, and various mills, mandrels, molds, electric motors and office equipment. The Southern Tire & Rubber Company was formed in 1911 and had a capacity of 200,000 tires and 100,000 tubes annually.

B. F. GOODRICH COMPANY INCREASES SALES TOTAL

For the first nine months of the current year, sales of the B. F. Goodrich Company showed a substantial increase over the corresponding period of 1928, both in tonnage and in dollars and profits. This statement was made officially after the quarterly meeting of the board of directors held on November 6.

The regular dividend of $1.75 per share was declared on the preferred stock, payable January 2, 1930, to stockholders of record at the close of business December 10, 1929. A dividend of $1 per share was declared on the common stock without par value, payable December 2 to stockholders of record as of November 18.

Harvey Firestone, Jr., to Visit Europe



HARVEY FIRESTONE, JR., vice-president of the Firestone Tire & Rubber Company, sailed for Europe early this month on a business trip for his firm. He is shown here aboard the *Ile de France* with his father and brothers, who saw him off. From left to right are Leonard K., Harvey S., Jr., Harvey S., Sr., Russell H. and Raymond C. Firestone. He was accompanied on his trip by Mrs. Firestone, Samuel Broers, vice-president of the Firestone Export Corporation, and E. A. Hoener, chief engineer.

RUBBER COMPANIES HAD HIGH PROFITS IN 1927

While rubber companies elsewhere in the United States decreased in number and reported smaller incomes for 1927, Ohio's rubber industry, centered in Akron, showed an increase in activity and returned a larger income, according to Internal Revenue Bureau figures recently compiled and released. Of a total of 108 companies in Ohio, 70 filed corporation income returns for 1927, disclosing a net income, as against the 1926 record when only 57 concerns out of a total of 112 reported net incomes.

For 1927, the 70 Ohio rubber manufacturing companies reported a gross income of $678,564,417 and a total net income of $43,256,109. In 1926, the 57 rubber companies in Ohio reporting a net income indicated a gross income of $554,142,980 and a net income of only $14,042,252. Total corporation income taxes paid by rubber companies in Ohio for 1927 amounted to $5,520,298 as compared with $1,861,090 for the year 1926.

The bureau announced that its survey indicated that income tax returns filed by rubber companies in all states disclosed a decrease in 1927 as compared with 1926 and also a slight drop in the number of concerns reporting a net income. Throughout the United States, rubber manufacturing firms reporting a net income numbered 335 in 1927 with net profits of $70,253,152. There were 339 similar concerns listed as for 1926 reporting a net profit of $37,500,977.

Boston Woven Hose Profit

The Boston Woven Hose & Rubber Company, Boston, Mass., earned $10.61 a share on its outstanding common stock in the year ended September 30. This compares with earnings of $7.96 a share in the previous year.

RAYBESTOS-MANHATTAN INCREASES ITS PROFIT

Detailed official reports by Raybestos-Manhattan, Inc., show that the company had a net income in the quarter ended September 30 of $1,010,390 after depreciation, federal taxes, etc., equivalent to $1.49 a share on 676,012 no-par shares of common stock. This makes a total for the nine months of 1929 of $3,108,919, or $4.60 a share on the common.

In the third quarter of 1928, the constituent units of Raybestos-Manhattan, Inc.—Raybestos Company, Manhattan Rubber Manufacturing Company and United States Asbestos Company—had a net income on a consolidated basis of $805,791, equal to $1.19 a share on the present common, and a net income for the nine months of last year of $2,108,552, or $3.12 a common share.

MONSANTO CHEMICAL HAS HIGHER NET EARNINGS

The Monsanto Chemical Works has reported net earnings of $878,839, after federal income taxes, for the nine months ended September 30, 1929, as compared with $692,980 for the same period of 1928. These figures do not include earnings of any of the subsidiary companies, and the increase was accomplished after certain unusual charge-offs incidental to the starting up of the new plant recently completed.

Properties acquired in the past few months—Merrimac Chemical Company, Rubber Service Laboratories Company and the fine chemical division of the Mathieson Alkali Works—have increased Monsanto's total assets from about $12,000,000 at the end of 1928 to almost $24,000,000 at the present, while the number of products manufactured has increased from 100 to 200.

GOODYEAR OF CANADA EARNS $3,488,143 IN YEAR

The report of the Goodyear Tire & Rubber Company of Canada, Ltd., and subsidiaries for the year ended September 30, 1929, shows consolidated profit after taxes but before depreciation as $4,322,260. After deducting $834,117 for depreciation, net income amounted to $3,488,143. The profit of the parent company for the year ended September 30 last, was $4,248,578 after taxes but before depreciation, comparing with $3,577,697 in the preceding year.

The balance sheet shows current assets at $11,376,218 against current liabilities of $1,411,095, leaving net working capital of $9,965,223, an increase of $1,139,537 over preceding year. Current assets included $1,837,198 cash, $3,110,000 call loans, $2,462,906 receivables and $3,966,214 inventories. Current liabilities consisted solely of accounts payable of $927,385, miscellaneous of $333,710 and reserve for pension fund of $150,000.

Total assets are carried at $22,465,936. Plant and equipment are given a valuation of $11,019,450 against which there is a reserve for depreciation of $4,398,847.

C. H. Carlisle, president, in annual statement, says the company borrowed no money during fiscal year, and at all times had a considerable amount of money on call. During the year $2,066,679 was paid to stockholders and $954,715 spent on plant and equipment. Property extensions include purchase of a warehouse and office building in Vancouver, and building of an office and warehouse at Saskatoon, extension to mechanical goods factory at Bowmansville, extension to power house at New Toronto and extension to cotton plant at St. Hyacinthe.

Due to extensions at the cotton plant, it was necessary to call the outstanding securities of Goodyear Cotton Co. and create a new bond issue of $2,000,000, of which $1,046,000 is outstanding, and it is proposed later to sell a portion of the remaining bonds. This addition will be in operation by February, 1930, and will have capacity of 5,000 spindles.

Rubber Stocks Steadier

Rubber company stocks were much more steady in the decline culminating November 13 than in the previous slump at the end of October. Prices of leading rubber company shares on November 18 compare as follows:

	Last Price		High	Low
	Nov. 18	Nov. 4	—1929—	
Ajax	2½	3	11¼	2
Falls	—	—	11⅜	4
Faultless	35	36	45	30
Firestone	32⅛	41	41½	30
do. new 6% pfd.	83	98¾	98¾	79
Fisk	4½	5⅜	20⅛	3½
do. 1st pfd.	20	20⅛	72½	15
General	—	—	298	236
do. pfd.	—	—	102	92
Goodrich	47½	55	105¾	42
do. pfd.	—	105	115⅛	105
Goodyear Com.	65⅞	73	154½	60
do. pr. pfd.	91¼	95⅞	104⅞	87
India	20	21	73	19
Intercontinental	6⅞	6¼	14¼	2
Kelly Springfield	5	6¾	24	3⅞
do. 1st pfd.	28	35	100	28
Lee	7	8	25	5
Miller	6⅞	9⅛	28¾	5⅛
do. pfd.	30	55	83	30
Mohawk	12	14	66	10
do. pfd.	—	—	90½	78
Norwalk	1½	1⅝	6⅛	¾
Pirelli	47⅝	52¾	68	43¼
Seiberling	17⅞	—	65	15
do. pfd.	—	—	107⅞	90
U. S. Rubber	25¼	32	65	15
do. pfd.	47¾	59½	92½	40⅛

U. S. RUBBER MANAGERS CONVENE AT DETROIT

A convention of 50 district and regional tire sales managers of the United States Rubber Company from all parts of the country was held at Detroit, Mich., early this month. Joseph F. O'Shaughnessy, assistant general manager in charge of sales, and L. M. Simpson, general sales manager of the tire department, had charge of the convention, which was of four days' duration.

The object of the sessions was to acquaint the field men with the enlarged sales and advertising program of the company for 1930, which calls for a considerable increase in the volume of newspaper advertising space to be used during the coming year and an appreciable step-up in the output of United States tires.

One of the featured speakers was William C. Blake, manager of bus and taxicab tire sales for the company, who pointed out that after only eight years of development motor buses now operate regularly over 290,000 miles of bus routes in the United States, as compared with 250,000 miles of steam railroads and 45,000 miles of electric railways. He declared that buses in this country now carry three billion people a year, who pay $300,000,000 for this type of transportation.

GOODRICH SILVER FLEET ENDS 30,000-MILE TOUR

With a total of more than 30,000 miles covering a period of nearly ten months, the Goodrich Silver Fleet wrote the final chapter to its 1929 cruise when it dropped anchor in its home port November 6. President James D. Tew and the directors of the B. F. Goodrich Company welcomed home to Akron the voyagers who had completed an epochal tour of the nation's highways and byways. It is estimated that 60,000,000 persons saw the fleet during its tour.

Commander H. R. Schaeffer maintained a daily log of the fleet's activities which reveals that the fleet found 48 per cent of its route over paved highways with 12 per cent over roads of sand dirt or mud and clay. Gravel, stone and shell highways were encountered over a large percentage of the route. Over these roads, 32 of the 60 stock tires completed the trip.

At a banquet tendered the commander and pilots following the celebration in Akron during the day, Vice-President T. G. Graham complimented Commander Schaeffer and his crew on the successful completion of the 1929 tour. All the men are assigned to new places with the company.

India Tire Sales Conference

Sales representatives of the India Tire & Rubber Company from all parts of the United States and several from abroad completed a three-day convention October 16 with a business meeting at Mogadore, O. President W. G. Klauss and other company executives addressed the salesmen on business conditions and the outlook for the trade. The company has reported sales increases in the United States and foreign countries.

Rubberized Cord Belt Plant

V. I. Shuss, Mahaffey, Pa., will construct a two-story, 24 by 150 foot, rubber belt plant on Main Street in that city, for which the Rubberized Cord Belt Company will be the lessee. The work will be done by separate contracts.

Oak Rubber Plans New Plant

The Oak Rubber Company, Ravenna, O., will increase its present facilities for the production of rubber balloons and novelties by the construction of a new single-story factory, 50 by 126 feet in size, to cost approximately $40,000. The contract for the erection of the plant has been awarded to the P. L. Frank Construction Company of Ravenna.

Rubber Factory Accidents

Accidents in Ohio industries during September increased to 1,077 from 927 in August, according to a survey by the division of safety and hygiene of the State Industrial Commission. In the rubber industry, a total of 426 accidents were reported, but it is said by industrial statisticians that this figure actually represents a lesser percentage than prevails in other commercial classifications.

Michelin Reduces Operations

The Michelin Tire Company, Milltown, N. J., has laid off about 200 employes and has announced that its plant will work on only one shift of eight hours, instead of two shifts. At the same time it is stated that the company will erect one or more new buildings, add additional equipment, and make its factory one of the most modern in the country.

Goodyear Branch Expands

The Des Moines, Ia., branch of the Goodyear Tire & Rubber Company has assumed control of eastern Iowa and a small part of Illinois in addition to its present territory. This move doubles the territory operated out of Des Moines under the supervision of Frank Griesinger, branch manager. C. A. Cramer, formerly branch manager at Cedar Rapids, will become assistant manager of the Des Moines branch. Subbranches will be maintained over the state at Davenport, Cedar Rapids and Mason City, while warehouses are established at Waterloo and Burlington.

Government Specifications

The Federal Specifications Board is submitting to representative manufacturers proposed specifications for couplings for oil and sand suction and discharge hose, couplings and 1½, 2 and 2½ inch unlined linen hose, and 1½ and 2½ inch cotton rubber-lined hose, rubber-metal gasoline hose, and colon tubes. The board will send copies of the proposals to any firm interested and will be glad to receive any comment or suggestions as to changes which may be thought desirable. These comments should be sent to reach the board by December 21 to receive attention from the technical committee considering the subject.

MANUFACTURERS' CENSUS ZONE MEETINGS PLANNED

The Advisory Committee on Manufactures appointed by Secretary Lamont with Col. L. S. Horner, president of the Niles-Bement-Pond Company, as chairman is working actively on plans for the coming decennial census of manufactures to be conducted by the Bureau of the Census next year. Under the chairmanship of Robert M. Davis, a sub-committee on information is directing the attention of the nation's manufacturers to the census by newspapers and trade paper articles and by radio broadcasting.

Director Steuart of the Bureau of the Census has appointed John E. Palmer to direct a plan for securing the co-operation of manufacturers by approaching them in territorial groups. The country has been divided into 17 districts, and special luncheon conferences will be held in central cities in each district between now and January 4. The first was held at the Pennsylvania Hotel, New York City, on November 22 and was addressed by Dr. Julius Klein, assistant secretary of commerce. Others will be held at Philadelphia, Atlanta, Detroit, Buffalo, Pittsburgh, Cleveland, Chicago, New Orleans, Dallas, St. Louis, Omaha, Denver, Seattle, San Francisco, Los Angeles and Boston in the order named. The Cleveland meeting, which will be of especial interest to Akron rubber manufacturers, will be held on December 4 at the Statler Hotel.

COLUMBIAN CARBON MAKES 100,000,000 LBS. OF BLACK

The Columbian Carbon Company estimates that it will produce 100,000,000 pounds of carbon black this year, compared with 79,194,473 pounds in 1928; 18,000,000 pounds of other pigments, against 3,204,998 pounds in 1928; 25,000,000 gallons of gasoline, against 11,951,339; and 49,000,000,000 cubic feet of natural gas, against 47,112,301,000 in 1928.

Several additional units have been or are being added to the company's carbon black plants in Texas, at Lefors, King's Mill, Magic City, Borger and Lela. The company recently offered rights to stockholders to subscribe to additional shares, and last August it offered $16,000,000 of 6 per cent first mortgage bonds publicly.

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Rubber News Around the World

SHOW AMERICAN TIRES AT ENGLISH MOTOR EXHIBIT

London's annual Motor Show, while still the world's largest annual automobile exposition, set no new records for attendance this year. Approximately 300,000 people were present, however, an average of about 30,000 a day.

At the Dunlop stand it was stated that 87 per cent of all the tires on the cars at the show were Dunlops, including no less than 47 per cent of the foreign cars. These figures show a considerable appreciation on those of last year and indicate that so far Dunlop has been able to face the much-discussed competition of the new plants satisfactorily.

The tire exhibits occupied the whole of one side of the main gallery, 16 firms being represented. American, British, French, Belgian and Italian tires were on view and business generally was claimed to be more satisfactory than last year.

Among the tire and other rubber exhibits were those of the Avon India Rubber Company, Ltd., British Goodrich Rubber Company, Ltd., Dominion Rubber Company, Ltd., Englebert Tyres, Ltd., Firestone Tyre & Rubber Company, Ltd., Goodyear Tyre & Rubber Company (Great Britain), Ltd., Wm. Goodyear & Sons, Ltd., Henley's Tyre & Rubber Company, Ltd., Etablissements Hutchinson, India Tyre & Rubber Company (Great Britain), Ltd., Leicester Rubber Company, Ltd., Lynton Wheel & Tyre Company, Ltd., David Moseley & Sons, Ltd., Palmer Tyre, Ltd., Pirelli, Ltd., A. Schrader's Son, Inc., Stepney Tyres, Ltd., Trowbridge Tyre & Rubber Company, Ltd., and Sorbo Rubber Sponge Products, Ltd.

Pirelli to Operate in Brazil

During his recent visit to Brazil, Count Pirelli of the Pirelli Rubber Company, Milan, Italy, announced in a speech in Sao Paulo that it is his company's intention to begin to manufacture tires, copper wire and copper cable in Sao Paulo in the near future. He assured his listeners that he would so far as possible employ native Brazilian labor and raw materials.

Para Tire Factory to Expand

In order to lend all possible assistance to the infant tire manufacturing industry of that city, the State government of Para, Brazil, has decided upon the exclusive use of the locally-made tires on all official automobiles. The factory, located in the city of Para and owned and operated by Phelipe Farah, has an output of about 10 tires daily, but will shortly have its production considerably increased.

Statistical Bureau Planned

A proposal is now under consideration in England to set up a bureau for the collection and dessimination of statistics in the Lancashire rubber industry. The information obtained would act as a guide to rubber manufacturers in their output program, since it would enable them to gauge the requirements and capacity of the market with greater accuracy than at present. An attempt may also be made to secure greater standardization in manufacture, which would result in lower production costs. Lancashire is the center of the British waterproofing industry.

American Tires Around the World

THIS is the establishment of Arrosagaray & Amelong, Goodyear Tire & Rubber Company distributors in the city of Rosario, Argentina. The sale of American tires in the Argentine has increased to such proportions that the Goodyear organization will shortly construct a branch factory there.

BARNET GLASS RUBBER EARNS $621,600 IN YEAR

The Barnet Glass Rubber Company, Ltd., prominent Australian manufacturer, after making provision for depreciation on buildings, plant, rolling stock, fixtures, etc., made a net profit of £127,637, or approximately $621,600, as the result of operations in the year ended June 30 last. Net profit for the previous year was £104,937. An amount of £22,721 is brought in, and after deducting interim dividend paid on March 26, 1929, £37,500, there is a balance of £112,858.

The directors recommend payment of dividend for the half-year on 200,000 cumulative preference shares at 5 per cent, making a total of 10 per cent for year, and requiring £10,000, also dividend for the half-year on 550,000 fully paid ordinary shares at 5 per cent, making a total of 10 per cent for year, and requiring £27,500. They propose to transfer £50,000 to reserve fund (making a total reserve of £150,000), leaving £25,385 to be carried forward. Dividends are at the same rate as those paid for 1927-1928.

No reference is made in the report to the acquisition during the year of the ordinary shares of the company by the Dunlop Rubber Co. of Australasia, Ltd., now called the Dunlop Perdriau Rubber Co., Ltd.

RELIANCE RUBBERWARE HAS A LOSS OF $93,900

An initial financial report by Reliance Rubberware, Ltd., covering the period of 18 months ended June 30 last, shows a net loss of £19,263, or approximately $93,900, which is carried forward. In accordance with its original plans, the leases of six retail shops were acquired during the past year, but owing to the drought these shops suffered heavy losses, and it has been decided to discontinue this branch of the company's activities.

Since June 30, the lease of one shop has been disposed of at a profit and negotiations are in progress for the disposal of the remaining branch shops. A large proportion of the net loss shown is attributed to the failure of the retail shops, together with the result of the year's abnormal drought on the waterproof trade. The company has perfected a latex proofing process, which is now in production, and has started the manufacture of rubber flooring.

Special Dunlop Ad Campaign

While continuing its normal advertising schedules, the Dunlop Rubber Company, Ltd., spent approximately $50,000 on a special intensive newspaper campaign on the waterproof garment line of its subsidiary, the Dela Rubber Company, during the last two weeks of October and the beginning of November. Half-page and quarter-page advertisements in the leading London dailies were used, the campaign being under the direction of Sir Charles Higham.

Names in the News

GEORGE M. ROWLAND has been promoted by the Inland Manufacturing Company, a division of the General Motors Corporation, to the position of technical superintendent of the rubber department. Before coming to the Inland company, Mr. Rowland was with the Goodyear Tire & Rubber Company where he served in several capacities for 14 years. Mr. Rowland has now been with the Inland organization for one year, formerly having charge of the control laboratory in factory production.

T. G. GRAHAM, vice-president, and other officials of the B. F. Goodrich Company visited the Los Angeles factory of the firm and attended a conference at Pasadena, Cal., of 150 Goodrich dealers early this month. Other executives in the party from Akron were ROBERT MCTAMMANY, general manager of tire sales; C. B. O'CONNOR, general sales manager of the retail tire division; W. C. BRAY, sales manager of the truck tire division; COL. J. A. KICK, manager of sales promotion and sales analysis; P. J. KELLY, advertising manager; and H. M. BAKER, personnel manager.

ALVIN F. BUCHANAN, who has been associated with the United States Rubber Company four years, specializing on mechanical advertising, has been appointed as manager of mechanical goods advertising. Mr. Buchanan, a Dartmouth man, has as assistant manager of mechanical goods advertising for the past two years been virtually in charge of the work of that section.

F. G. STARR of the rim plant of the Goodyear Tire & Rubber Company was awarded a prize of $500 for an efficiency suggestion made early this month. H. B. GEER of the Goodyear general accounting department received a prize of $250 for a suggestion.

HOWARD C. STEINER, export manager for the Goodyear Tire & Rubber Company in Japan, returned to Akron for the month of November. He will sail for Yokohama early next month.

J. A. HOBAN, for the past four years branch manager of the B. F. Goodrich Company at Pittsburgh, Pa., was transferred on November 1 to Chicago, Ill., to take charge of the company's interests in five midwestern states. He joined the Goodrich organization in 1919 and served previously as branch manager at Cincinnati, O.

CARL KNOBLOCH, Akron consulting engineer, and T. KARNAGHAN SEIBERLING, of the Seiberling Rubber Company, are plaintiffs in an injunction suit pending in the United States district court at Cleveland against the General Instrument Company, in which infringement of patent rights for a liquid level gage is charged.

W. H. TYLER has been appointed as manager of the dealers' tire sales division of the Seiberling Rubber Company of Canada, Ltd.,

W. H. TYLER

with headquarters at Toronto, Ont. Mr. Tyler has been associated with the Goodyear Tire & Rubber Company in the capacity of manager of solid tire sales and manufacturers' equipment business and has been connected with other rubber companies. He became affiliated with the Seiberling Rubber Company of Akron, O., in 1925 and when transferred to Canada, was holding the position of district manager with headquarters at Syracuse, N. Y.

HOWARD S. CRAMER, a graduate of Akron University in the class of 1926, has returned to take up a position with the research department of the Goodyear Tire & Rubber Company, after receiving his degree of doctor of philosophy in chemistry at the University of Wisconsin. He received his master of science degree from the same institution in 1928 and, while at the university, was assistant to DR. HOMER ADKIN, professor of organic chemistry.

JAMES D. TEW, president of the B. F. Goodrich Company, was one of the principal speakers at the first Ohio Management Conference, held at Columbus on November 20, talking on the subject of "The Manufacturer's Responsibility to His Dealers." The conference was sponsored by a group of manufacturers, bankers and retailers, with the co-operation of the Metropolitan Life Insurance Company.

J. S. ESTRUCH of the sales staff of the Goodyear Tire & Rubber Company has returned to Spain, his native country, to work with the tire sales organization there. Until recently, he had been stationed at Manila.

WILLIAM M. MCCONNELL, pilot of the Firestone Tire & Rubber Company trimotored airplane, established a new record for commercial flying when he finished his first five months' service with the company on November 1. During that time, he has flown 41,895 miles, or an average of 270 miles a day. Taking the ship up for an average of four flights a day, a total of 599 flights, he has spent an average of three hours and 10 minutes in the air daily. The plane visited 33 states, landed in 78 different cities, flew to Canada three times, and carried a total of 5,257 passengers. Pilot McConnell has not had the slightest accident while flying the plane.

ARNOLD H. SMITH is expected to leave for England at the end of this month where he will be the European technical representative of the Rubber Service Laboratories Company, Akron, O. All of the R. S. L. products, including accelerators, anti-oxidants, colors, etc., are sold in Europe and all countries outside the United States by the Binney & Smith Company, to the sales staff of which Mr. Smith will act as technical assistant. His address will be King William House, Arthur Street, London, E. C. 4.

H. W. PERRITT, formerly director of the Louisiana Minerals Division of the State Department of Conservation, has assumed the duties of general manager of the gas and land division of the Century Carbon Company, which is controlled by Wishnick-Tumpeer, Inc. He has been with the Department of Conservation for about nine years, previous to which service he had been in charge of the Haines oil field.

CHARLES B. WHITTELSEY, who retired on November 1 as head of the Hartford factory of the United States Rubber Company, has taken over the duties of executive vice-president of the Hartford Chamber of Commerce. He joined the staff of the Hartford factory in 1901, was made superintendent in 1906, factory manager in 1911, and president in 1916, a position he held for 11 years.

CATALPO
for
Treads

CATALPO
for
Inner Tubes

Current Crude Rubber Items

NATIVES MAKE CHANGES IN RUBBER MARKETING

Some interesting changes have taken place in the Netherland East Indies native rubber marketing methods since the new regulations controlling the quality of the native product went into effect, the Department of Commerce is informed by Trade Commissioner Barringer, Batavia.

Before the new regulations were enforced the native traders attached their rubber to the bottom of bamboo rafts and transported it submerged in the water down river to market. This was in a way an advantage to the buyers, since all rubber thus brought to the market had about the same percentage of water in it, so that a fairly regular price unit was established.

The Government inspectors, however, experienced considerable difficulty in properly examining the rubber when it was shipped submerged in the water, so to put a stop to this, a new regulation was enforced that all rubber had to be shipped dry aboard craft.

The result has been that the Chinese middlemen who formerly bought at the market, now operate small steamers to collect the rubber upstream as the natives do not have the funds to arrange for large barges or steamers, and bamboo rafts are too small now to carry the rubber profitably. A bamboo raft costs about 50 guilders and can only carry about 400 piculs of rubber, so the native who cannot go beyond this expense is consequently ousted by the Chinese middlemen.

The Chinese buyers object to buying native "dry rubber," as it is now more difficult than formerly to ascertain the exact value, due to the fact that every shipment purchased is in different stages of dryness. The Government has been informed about the undesirable situation and one meeting had had already been called by the Resident so that the interested parties could discuss the situation.

Malaya to End Propaganda Grant

Addressing the Federal Council in Singapore, Sir William Peel, Chief Secretary, said that the Government was definitely of the opinion that, with the price of rubber as stable as it had been during the past 12 months, it was no longer justified in contributing towards rubber propaganda or in refraining any longer from levying the necessary taxes to meet the cost of the Rubber Research Institute.

GOLDEN HOPE PLANTATION BUYS BALGOWNIE ESTATE

The directors of the Golden Hope Rubber Estate have made an offer to acquire the Balgownie Rubber Estates, Ltd., the area of which is 2,000 acres, 1,639 acres being planted. The purchase consideration is 50,720 Golden Hope £1 shares, these shares to rank for dividend at one-fourth of the rate of dividend declared for 1929. This offer has already been approved by the Balgownie shareholders.

At present there are 20,000 unissued Golden Hope shares. In order to carry through the purchase it is proposed to increase the authorized capital to £250,000 by the creation of 100,000 new shares.

RECORD LOWS ARE MADE ON RUBBER EXCHANGE

On November 13, when prices on security markets sank to the lowest point in the recent decline, crude rubber futures on the Rubber Exchange of New York also made new low records. The closing spot price on that day was 15.50 cents a pound, as compared with 17.70 cents at the end of the previous fortnight and with 26.60 cents on February 26, the high for the year. Since that day, the price has rallied a full cent and appeared to be about to go higher at the end of the period.

DUTCH EXPORTERS PLAN TARIFF CLAUSE PROTEST

Importers of crude rubber from the Dutch East Indies are expected to confer with leading American consumers before the tariff bill, containing the Blaine amendment excluding products of forced labor, goes to conference between the house and senate. Officials at The Hague are studying the Blaine amendment with a view toward a probable official statement of the Netherlands position, according to reports from the legation at Washington.

The amendment, sponsored by Senator Blaine of Wisconsin, prohibits importation of goods made by any labor other than free labor and will particularly affect rubber planters in all Dutch East Indian islands except Java. In opposition to the measure, it was pointed out that such plantation labor is secured under three-year contracts, voluntarily signed, and that force is used only upon breaking of contracts, which is usually accompanied by the worker's desertion of his family. It also has been urged that it is practically impossible to separate rubber produced by free labor and rubber produced by contract labor "under penal sanction" when the commodity reaches this country.

INDIAN RUBBER ESTATES SHOW 46% GAIN IN YEAR

Detailed statistics regarding rubber production in India just released by Dr. D. B. Meek, Director General of Commercial Intelligence, show that the number of plantations increased from 1,912 in 1927 to 2,782 in 1928, a gain of nearly 46 per cent. The increase in acreage was not so large, however, the 1928 figures showing 245,809 acres as against 228,756 in 1927. New lands planted with rubber in the year amounted to 18,076 acres and the area of old cultivation abandoned to 3,317 acres, showing a net gain of 14,759 acres over the total planted area of 152,257 acres in 1927. The total area actually under rubber was, therefore, 167,016 acres, and of this area only 108,585 acres were tapped.

The total production of crude rubber during the year is reported to have been 26,839,332 pounds as against 26,042,258 pounds in 1927. The daily average number of persons employed in the plantations during 1928 was 58,292, as compared with 52,899 in the preceding year.

Closing Prices on Rubber Exchange of New York, Inc.

FROM NOVEMBER 4 TO NOVEMBER 18, 1929

		Spot	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Sales*
Nov.	4	17.20	17.20	17.50	17.80	18.10	18.50	18.50	18.60	18.80	18.90	19.00	19.10	19.30	557
	6	16.70	16.70	17.00	17.20	17.50	17.80	18.00	18.20	18.40	18.50	18.60	18.60	18.80	1,179
	7	16.80	16.80	17.10	17.30	17.60	17.90	18.10	18.20	18.40	18.50	18.60	18.70	18.90	560
	8	16.50	16.50	16.80	17.00	17.30	17.60	17.80	17.90	18.10	18.20	18.40	18.50	18.70	473
	9	16.50	16.50	16.80	17.00	17.30	17.60	17.70	17.80	18.00	18.30	18.40	18.50	18.70	147
	11	16.00	16.00	16.30	16.50	16.80	17.10	17.30	17.40	17.60	17.80	17.90	18.00	18.00	599
	12	15.70	15.70	15.90	16.10	16.40	16.80	17.00	17.10	17.50	17.50	17.60	17.70	17.90	971
	13	15.50	15.50	15.70	16.00	16.30	16.60	16.80	16.90	17.10	17.30	17.40	17.50	17.70	1,062
	14	16.30	16.30	16.50	16.80	17.10	17.50	17.60	17.70	17.90	18.10	18.20	18.30	18.50	932
	15	16.60	16.60	16.80	17.10	17.50	17.90	18.10	18.20	18.40	18.50	18.60	18.70	18.90	945
	16	16.20	16.20	16.50	16.90	17.20	17.50	17.70	17.80	18.00	18.20	18.30	18.40	18.60	278
	18	16.50	16.50	16.70	17.00	17.30	17.70	17.90	18.00	18.20	18.30	18.50	18.60	18.80	502

*In lots of 2½ tons each

INTERNATIONAL PULP CO., *41 Park Row, New York, N. Y.*

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LIBERAL WORKING SAMPLE FURNISHED FREE

Rubber Goods and Specialties

Goodyear Puncture Seal Tube

The Goodyear Tire & Rubber Company, Akron, O., is now marketing a Puncture Seal inner tube which is guaranteed to retain its puncture sealing ability for its entire life. The tube is made with a tread considerably thicker than the rest of the tube. The rubber in this tread is put under compression by molding it in such a way that it curves inward before inflation. When the air rounds out the tube the inner surface becomes tightly compressed. This compression squeezes rubber tightly around nails or other sharp objects and also closes the hole

when the object is withdrawn. The plastic compound is practically "self healing," according to the manufacturer, keeping the tube airtight. Before its introduction on the market, years were spent in testing, developing and perfecting this tube. It is particularly intended for women drivers and for special service cars and trucks.

Golf Practising Mat

A golf practising mat of rubber patented by A. Powell, Stoke-on-Trent, England, has two holes molded or cut into it for the reception of attachments of resilient material. The attachments are self-erecting without the aid of springs, and one turns over into a recess when struck by the club. They are secured to the mat by screws or bolts which may be provided with washers. An arrow may be marked on the mat.

Buoyant Swimming Garment

An inflatable garment patented by W. Joberns, Wolverhampton, England, comprises two layers of rubber or other waterproof material separated by semi-rigid distance pieces which may consist of lengths of rubber strip, tube, or spongy rubber, vulcanized or otherwise connected to the layers. The air space between the layers increases toward the top of the garment. The garment, which may be lined, buttons down the chest where it is not inflated.

Dela Waterproof Coats

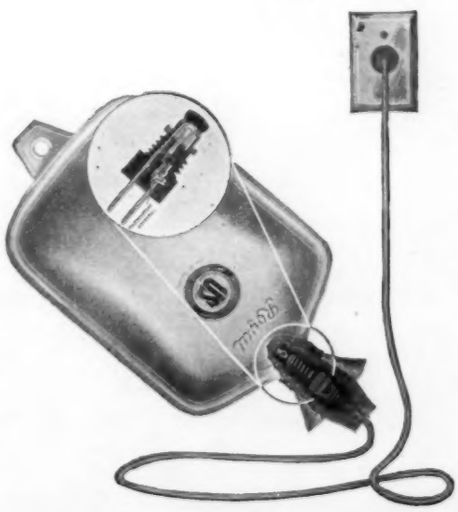
The Dela Rubber Company, Ltd., London, England, has been greatly augmenting its line of waterproof clothing and now is increasing its sales with several new models. The light double-breasted waterproof model for men and the striking black and white waterproof for women shown in the illustration are only two of a wide range of styles covering every type of coat and wrap for any sort of weather. Tweed coats, proofed by a special process, are foremost among the company's best sellers, especially those with opossum or shorn lamb collars. The modern mackintosh line of the Dela company also includes silks, satins, check and dice pattern velvets, and distinctive ulsters in smart lines for the races, in beige and caramel brown, with high collars and contrasting revers, cuffs, and pockets. Reversible evening cloaks made in waterproof Delasilk with a new cowl collar, which can be worn as a hood, will protect both gown and coiffure on wet evenings.

Fisk Air-Flight Tire

The Fisk Rubber Company, Chicopee Falls, Mass., has begun production on a new series of tires to be known as the Air-Flight line. The revised line, according to the manufacturer, is based on a new principle of tire construction which, by means of a larger air chamber, more scientific distribution of materials and more flexible materials, means that the load of the car is carried more on the air contained within the tire and less on the tire itself. The multiple cable bead reinforces and gives added strength to the tire at the rim and also increases side wall flexibility, and a stream line tread of the same width as the tire at the rim does away

with superfluous and useless tread rubber that is said to be an unnecessary drag. These tires, which were introduced to the public by a four-page color advertisement in the *Saturday Evening Post,* are being made in the De Luxe, Rugged, Fisk and Premier lines.

"U. S." Electric Hot Water Bottle



Refilling with hot water is made unnecessary with the "U. S." electric hot water bottle, manufactured by the United States Rubber Company, 1790 Broadway, New York City. The heat of the bottle can be kept at an even temperature as long as desired by means of the "Keephot" stopper attachment, while the provision of a thermostatic control prevents the danger of the water becoming too hot. The stopper has the approval of the National Board of Fire Underwriters. The complete outfit comprises a red "U. S." Royal hot water bottle, "Keephot" stopper, ten feet of rubber-covered cord, and a plug that fits any A. C. light socket. It is packed in a neat carton, and the few simple directions are enclosed with each set.

RUBBER-COATED BOAT IS WINNER OF MOTOR RACE

Alger G. Maranville, of the aeronautical department of the General Tire & Rubber Company, piloting a Caille motored outboard motor boat, won the class C Miami Boat Club race at Dayton, O., last month and placed third in the class D race for boats with larger engines. He believes that a rubber covering used on his craft had much to do with his success and that it will be used generally on speed boats in the future.

Maranville's boat was covered with a special rubber outer coat developed under his direction by General. The covering furnished increased resiliency in the bouncing of the boat and prevents the under side from getting water soaked and, therefore, retarding its speed.

Rubber Firm Changes Name

The Rubber Cement Manufacturing Corporation, Millington, N. J., has announced that it will hereafter be known as the Rubber & Asbestos Corporation and will be located at 26 Cornelison Avenue, Jersey City, N. J., with larger quarters. The management of the firm has not been changed in any way, it is stated.

Whitehead Brothers Expand

Whitehead Brothers Rubber Company, Trenton, N. J., is installing additional machinery to increase its production of hose and belting. The company has been busy for some time and was forced to add the new machinery in order to meet the demand for its products.

The Philadelphia Rubber Works Company

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WANTED by a responsible manufacturing concern in the East, a chemist experienced in rubber footwear compounding. State experience. Reply to Box 541, THE RUBBER AGE.

EASTERN Mechanical Goods Plant has opening for experienced chemist-compounder, capable of assuming charge of laboratory adapting new developments to factory practice. Experience with specification work desired if possible. Position represents excellent opportunity for young man having necessary experience and is available at once. Inquiries should contain all necessary information on which to judge applicants. Address Box 542, THE RUBBER AGE.

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LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

NEW YORK, NOVEMBER 18, 1929

COTTON

DISCOUNTING a general falling off in consumption and a higher government estimate of the year's crop and acting in sympathy with the stock market, cotton has been declining rather steadily during the past fortnight. From a spot price for middling upland cotton of 18.05 cents a pound on November 2, the quotations for the commodity fell off consistently to a low of 17 cents on November 13 and were only a half a cent above that figure at the end of the period.

On the final day under review, cotton dropped 27 to 29 points with heavy selling of December. Rubber interests are supposed to have sold through Wall Street some 20,000 bales of December, with notices due on the 25th. This, combined with other selling from scattered sources, helped to force the price downward.

The statistical position, however, is no less favorable. The crop will be about 15,000,000 bales and the total supply, including the carryover, about 19,500,000 bales. This is about the same as, or even more favorable than the position for the past three years, during each of which the price was from 2¼ to 3 cents higher than today.

High, low and closing prices quoted on November 18 were as follows:

	High Nov. 18	Low Nov. 18	Close Nov. 18	Close Nov. 2
Nov.	—	—	17.13	17.61
Dec.	17.50	17.27	17.28	17.86
Jan.	17.62	17.41	17.42	17.98

Tire Fabrics

Tire fabrics were very slow during the fortnight with 43 cents the low reported on carded peeler cords 23s 5-3 ply 1 1/16-inch net f. o. b. mill. Light sales of both Americans and Egyptians were made, but larger tire manufacturers were interested only in filling-in amounts. Many fabric manufacturers were curtailing production to a considerable extent. Latest price quotations were as follows:

CORD			
Peeler, carded, 23/5/3	lb.	.45 @	.45½
Peeler, carded, 23/4/3	lb.	.46½@	.47
Peeler, carded, 13/3/3	lb.	.42½@	.43
Peeler, carded, 15/3/3	lb.	.43 @	.43½
Egyptian, carded, 23/5/3	lb.	.49½@	.50
Egyptian, combed, 23/5/3	lb.	.55½@	.56
CHAFERS			
Carded, American, 8 oz.	lb.	.39 @	.40
Carded, American, 10 oz.	lb.	.38½@	.39
Carded, American, 12 oz.	lb.	.38½@	.39
Carded, American, 14 oz.	lb.	.38½@	.43½
LENO BREAKER			
Carded, American, 8¼ oz.	lb.	.39 @	.44
Carded, American, 10¼ oz.	lb.	.39 @	.44
SQUARE WOVEN			
Carded, American, 17¼ oz. 23-11 ply	lb.	.45½@	.46½
Carded, American, 17¼ oz. 10-ply	lb.	.38½@	.39

Sheetings

Sheetings were generally lower during the fortnight. Latest prices, as reported by the Textile Brokers Association, follow:

40-inch, 2.50-yard	yd.	.12¼@	.12½
40-inch, 2.85-yard	yd.	.10⅝@	.11⅛
40-inch, 3.15-yard	yd.	— @	.11
40-inch, 3.60-yard	yd.	.09⅜@	.09⅝
40-inch, 3.75-yard	yd.	.08⅞@	.09⅛
40-inch, 4.25-yard	yd.	.07⅞@	.08⅛

Ducks

Developments during the past two weeks are believed to disclose the fact that the cotton duck position, while sound, is not as secure as recently. Where price ranges on quantity had existed, mills were more ready to shade a point on goods for the balance of the year, and in some cases made it known that they would consider discounting the market for yardage. On such a basis it was reported that some business was done toward the close of the period. Latest price quotations reported were as follows:

Belting and Hose	lb.	.35 @	.36½
Enameling	lb.	.32½@	.36
Single filling	lb.	.14½@	.16
Double filling	lb.	— @	.18

RECLAIMED RUBBER

Production and consumption of reclaimed rubber in the United States during October were evenly balanced. According to the statistics of the Rubber Manufacturers Association, raised to a 100 per cent basis, production was 18,865 long tons and consumption 18,744 long tons. This compares with September production and consumption figures of 18,660 tons and 17,071 tons, respectively. Stocks on hand by October 31 were reported as 25,117 long tons, as compared with domestic stocks on September 30 of 24,984 long tons. Prices, which weakened somewhat during the fortnight, closed as follows:

High Tensile			
Super-Reclaim No. 1 Black	lb.	.12 @	.12¼
High Tensile Red	lb.	.11½@	.12
Shoe			
Unwashed	lb.	.07 @	.07¼
Washed	lb.	.09¾@	.10
Tube			
No. 1 (Floating)	lb.	.12½@	.13
No. 2 (compounded)	lb.	.10 @	.10½
Tires			
Black	lb.	.07 @	.07¼
Black, selected tires	lb.	.07¼@	.07½
Dark Gray	lb.	.09½@	.10
Light Gray	lb.	.11 @	.11½
White	lb.	.11½@	.12
Truck, Heavy Gravity	lb.	.07 @	.07¼
Truck, Light Gravity	lb.	.07¼@	.07½
Miscellaneous			
Mechanical Blends	lb	.06½@	.07
Red	lb.	.11½@	.12

Scrap Rubber

The fact that both reclaim production and consumption in October were higher than for the previous month served to hearten the rubber scrap trade to some extent. There has been a slight easiness in price quotations, but more firmness is expected when the demand from reclaimers begins to increase to meet 1930 requirements. Late prices follow:

(Prices to Consumer)

Auto tire peelings	ton	35.00	@37.50
Standard White auto	ton	45.00	@47.50
Mixed auto	ton	22.50	@23.00
Bicycle tires	ton	18.50	@20.00
Clean solid truck tires	ton	24.00	@25.00
Boots and shoes	cwt.	1.45	@ 1.50
Arctics, untrimmed	lb.	.00⅞@	.01
Inner tubes, No. 1	lb.	.07¾@	.08
Inner tubes, No. 2, compounded	lb.	.04¼@	.04¼
Inner Tubes, Red	lb.	.04¼@	.04⅝
Air Brake Hose	ton	25.00	@27.50
Rubber Hose	ton	17.50	@20.00

CRUDE RUBBER

LOWER prices for crude rubber than have prevailed at any time since early October in 1922 when the Stevenson Act was first created have been witnessed during the past fortnight. From a closing price of 17¾ cents a pound two weeks ago, the spot quotation for ribbed smoked sheets on the New York outside market dropped two cents to 15¾ cents by November 13 and had recovered only half of that decline by the end of the fortnight.

November 13 was, of course, the lowest point for the securities markets of the country, the culmination of the bearish panic that started last month, and all commodities showed declines due to the liquidation of long accounts. Crude rubber, however, was especially vulnerable because of the liberal supplies in sight, large stocks now being held in London and Liverpool, substantial quantities remaining on hand in this country, and fairly heavy supplies existing in the Far East. Prospects seemed to be for continued heavy shipments from producing centres, while reports from manufacturing centres showed little hope of immediate improvement in production schedules.

The tendency, therefore, is to expect that a large surplus of crude rubber will be carried over into next year. Judging by the present rate of output at rubber factories and the current state of the automobile industry, this will create supplies far heavier than the demand; but no one as yet has proven capable of foreseeing the course of either the rubber or the automobile industry. Several manufacturers in both fields have indicated that their 1930 production will surpass even this year's and it is far too soon to predict that American rubber consumption will not be able to keep pace with its source of supply. In the meantime, British rubber growers are reported to have agreed to a collective selling plan.

Plantations—			
Ribbed Smoked Sheets— Spot-Nov.		.16¾@	.17
Dec.		.17 @	.17¼
Jan.-Mar.		.17½@	.17¾
First Latex, crepe spot		.17¾@	.18
Amber Crepe, No. 2		.14½@	.14¾
Amber Crepe, No. 3		.14¼@	.14½
Amber Crepe, No. 4		.13½@	.14
Brown Crepe, Clean thin		.14 @	.14½
Brown Crepe, specky		.12½@	.14
Liquid Latex, per gal.		.90 @	
Paras—			
Up-river Fine		.17 @	—
Up-river Medium		Nominal	
Up-river Coarse		.09 @	—
Acre Bolivian, fine		.17½@	—
Caucho Ball, Upper		.09 @	—
Islands, fine		Nominal	
Centrals—			
Central, scrap		.08¼@	—
Esmeraldas		.08¼@	—
Balata—			
Block, Colombia		Nominal	
Block, Ciudad		.51 @	.52

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot-Nov.		8¼ @	8⅜d
Dec.		8⅜d	
Jan.-Mar.		8½ @	8⅝d

SINGAPORE MARKET

Spot		— @	8⅛d

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150 Nassau Street New York

LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

NEW YORK, November 19.—Contract orders are already being placed for next year's delivery in the rubber chemicals market, and the trend of this buying indicates that 1930 will see little or no appreciable change in prices for these ingredients.

When the fall in the securities markets occurred between the middle of October and the middle of November, leaders in the chemical industry were quick to assure their customers and the public that they expected 1930 to be one of their best years. Factory expansions point to increased production in many lines, while several newly introduced products are only just getting under way toward capacity output for next year.

ACCELERATORS

Organic

A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
Aldehyde ammonia, crystals	lb.	.65 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.80
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermic F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.25½@	.28½
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.62½
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Waxene	lb.	.30 @	.40
Z 88	lb.	.50 @	.60

Inorganic

Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.09¼@	.11
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)

Blues

Prussian	lb.	.35 @	.36
Ultramarine	lb.	.66 @	.80

Browns

Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07

Greens

Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½

Reds

Antimony

crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Marcon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Venetian red	lb.	.03 @	.06
Vermillion, quicksilver, English	lb.	2.00 @	2.05

Whites

Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox, f.o.b. St. Louis	lb.	.08½@	.09
Titanium Calcium Pigment, f.o.b. St. Louis	lb.	.08 @	.08½

Zinc Oxide—American Process

American Azo:

ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Horsehead Brand:			
Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅜@	.10⅞
blue label	lb.	.09⅜@	.09⅞
red label	lb.	.08 @	.08½

Zinc Oxide—French Process

White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅜@	.10⅞
Red seal	lb.	.09⅜@	.09⅞

Yellows

Chrome	lb.	.17 @	.17½
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.07½@	.07¾
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—

Blacks

Arrow "Aerfloted"	lb.	.07 @	.12
Bone Black	lb.	.07 @	.08½
Carbon, compressed	lb.	.06½@	.12
Carbon, uncompressed	lb.	.06½@	.11
Disperso, f.o.b. Louisiana	lb	.061 @	—
Disperso, f.o.b. Texas	lb.	.06 @	—
Drop Black	lb.	.06 @	.10
Fumonex	lb.	.06 @	.09
Gastex	lb.	.04½@	.08
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.07 @	.12
United carbon	lb.	.06 @	—
Velvetex carbon	lb.	.04½@	.06
Blanc fixe dry f.o.b. works	ton	80.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Cataipo (fact.)	lb.	.02 @	—
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	10.00 @	22.00
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Lexington	ton	10.00 @	22.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.22 @	.26
medium white	lb.	.20 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.92 @	4.12
Talc, domestic	ton	12.00 @	15.00
Whiting, commercial	cwt.	1.00 @	1.25
English cliffstone	cwt.	1.75 @	2.00
Superfine	ton	10.00 @	12.00
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.23½@	.25

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	40.00 @	42.00
Pioneer-granulated	ton	50.00 @	52.00
R & H Hydro-Carbon	ton	27.05 @	29.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids

Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66°	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	.38 @	.38½

Acids, Fatty

Stearex	lb.	.15 @	.19
Stearic, double pressed	lb.	.17 @	.22

Alkalies

Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.40 @	

Oils

Corn, refined, bbls.	lb.	.09½@	.10½
Cottonseed, crude		.07½@	.09
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c. l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.07¾@	—
Niger	lb.	.07½@	—
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.21 @	.26
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.63 @	.64
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. works)	lb	.02 @	—

Resins and Pitches

Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb.	bbl.	9.32 @	—
Pigmentar	lb.	.038 @	.0448
Tar Retort, 50 gal.	bbl.	13.50 @	15.00

Solvents

Acetone, pure	lb.	.12 @	.14
Alcohol denatured, No. 1 bbls.	gal.	.52 @	—
Benzol, 90%	gal.	.23 @	.25
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride	lb.	.06¼@	.07
Motor gasoline, steel bbls.	gal.	.16 @	—
Naptha, solvent	gal.	.35 @	.40
Turpentine, spirits	gal.	.55 @	.61
wood	gal.	.53 @	—
destructively distilled	gal.	.40 @	.43

Waxes

Beeswax, white	lb.	.51 @	.53
Carnauba	lb.	.35 @	.36
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30

Paraffin (c. l.—f.o.b. N. Y.)

Yellow crude scale	lb.	.03¾@	
White crude scale 124/126	lb	.04 @	
Refined, 125/127	lb.	.05¾@	
Refined, 128/130	lb.	.05½@	
Refined, 135/137	lb.	.07¾@	
Refined, 138/140	lb.	.08¼@	

ANTI-OXIDANTS

Albasan	lb.	.70 @	.75
Antox	lb.		
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.64 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03¼@	.03½
Sulfur flour, Refined, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags)	cwt.	1.75 @	2.10

TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

ESTIMATES that gross imports during October were more than 8,000 tons in excess of domestic consumption have apparently proven correct. Actual consumption last month was 34,800 tons, while the Rubber Manufacturers Association officially figures imports for the same period at 43,725 tons.

Despite this fact, however, the figure for stocks on hand in this country has not moved above the 90,000-ton mark, as was generally expected. According to the Rubber Manufacturers Association, domestic stocks on October 31 were 88,483 tons, a gain of only 4,121 tons over the figure given for the end of September. It still seems probable that American stocks will exceed 100,000 tons by the end of 1929.

London and Liverpool stocks, which were figured at 59,484 tons on October 26, had increased by November 9 to 65,460 tons, the heaviest amount since January, 1928. The amount of crude rubber invoiced to the United States in the first two weeks of November was slightly higher than during the last fortnight of October. Shipments from the Dutch East Indies to this country in the week ended November 2 exceeded 2,000 tons for the first time since the end of May.

Some indication of what is holding crude rubber consumption up is contained in the production figures for miscellaneous rubber goods. While tire output was at its lowest for the year during August, production of rubber proofed fabrics and of rubber heels were at their highest point. Production of rubber soles was the highest for any month since January, and shipments of mechanical goods were high.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available.

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U. S. Imports and Exports of Crude Rubber

YEARS	Gross Imports: Long Tons	Gross Imports: Total Declared Value	Gross Imports: Average Declared Value per pound Cents	Re-exports: Long Tons	Re-exports: Total Declared Value	Re-exports: Average Declared Value per pound Cents	Net Imports: Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,331	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	426,258	339,874,774	35.60	27,775	24,795,488	39.76	398,483
1928	**439,731**	**244,854,973**	**25.03**	**32,159**	**18,128,361**	**25.17**	**407,572**
1927:							
Jan.	43,340	36,753,719	37.86	1,525	1,444,734	42.28	41,815
Feb.	28,337	23,110,257	36.41	2,451	2,277,297	41.47	25,886
Mar.	35,515	28,693,016	36.07	2,763	3,249,665	52.50	32,752
Apr.	46,202	37,321,505	36.06	1,575	1,428,425	40.48	44,627
May	36,518	30,984 377	37.88	2,782	2,501,562	40.14	33,736
June	33,045	27,850,014	37.62	1,775	1,550,592	39.00	31,270
July	37,677	31,678,259	37.53	1,958	1,560,853	35.59	35,719
Aug.	32,810	26,396,931	75.92	1,809	1,382,768	34.12	31,001
Sept.	33,301	25,314.412	33 94	3,500	3,036,929	38.74	29,801
Oct.	30,184	22,163,282	32.78	2,513	2,042,713	36.29	27,671
Nov.	38,592	27,395,428	31.69	2,469	2,014,196	36.43	36,123
Dec.	30,737	22,213,574	32.26	2,655	2,245,754	37.77	28,082
1928:							
Jan.	39,107	30,278,444	34.56	1,988	1,734,990	38.95	37,119
Feb.	33,663	27,763,655	36.82	2,738	2,229,589	36.35	30,925
Mar.	40,611	32,103,042	35.29	3,718	2,587,435	31.07	36,893
Apr.	37,935	27,287,266	32.11	2,272	1,415,024	27.80	35,663
May	31,059	19,058,672	27.39	2,399	1,386,307	25.80	28,660
June	27,765	14,121,219	22.71	2,621	1,400,697	23.86	25,144
July	31,258	14,144,765	20.20	3,087	1,451,446	20.99	28,171
Aug.	31,204	12,860,150	18.39	2,377	1,084,646	20.37	28,827
Sept.	39,835	16,512,019	18.50	3,038	1,384,148	20.34	36,797
Oct.	44,058	18,200,332	18.44	2,405	1,085,407	20.15	41,653
Nov.	36,519	14,878,441	18.19	2,788	1,207,089	18.52	33,731
Dec.	43,511	17,580,966	18.04	2,738	1,165,748	19.00	40,773
1929:							
Jan.	57,564	22,872,943	17.74	3,663	1,773,401	21.61	53,901
Feb.	64,265	24,760,111	17.20	2,955	1,374,783	20.77	61,310
Mar.	50,604	20,380,905	17.98	4,218	2,094,037	22.16	46,386
Apr.	55,725	25,542,726	20.46	3,293	1,624,237	22.02	52,432
May	51,161	24,355,511	21.25	2,386	1,349,690	21.24	48,325
June	41,663	18,799,307	20.14	3,152	1,470,746	20.83	38,511
July	43,944	19,342,147	19.65	3,424	1,590,411	20.73	40,520
Aug.	37,222	16,530,090	19.83	2,644	1,232,217	20.80	34,578
Sept.	34,472	15,214,485	19.70	2,011	861,068	19.11	32,461
Oct.							
Nov.							
Dec.							

U. S. Consumption of Crude Rubber

(Rubber Manufacturers' Association statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	16,938	30,106	29,058	29,638	32,196	31,518	34,403	43,002
Feb.	14,767	30,149	25,736	19,761	31,136	30,137	33,702	41,594
Mar.	21,408	36,629	28,385	33,493	32,936	36,141	35,688	44,736
Apr.	**19,294**	**29,085**	**27,129**	**34,139**	**32,696**	**35,871**	**32,772**	**47,531**
May	23,246	36,155	25,845	35,322	29,364	34,592	37,333	49,283
June	31,713	24,272	22,753	35,822	28,598	33,801	37,676	43,227
July	24,522	17,685	23,396	36,053	27,577	29,219	37,407	41,526
Aug.	29,631	20,359	28,982	35,909	34,533	33,460	42,927	38,274
Sept.	24,410	17,594	31,497	31,691	32,904	27,214	39,882	34,707
Oct.	26,881	21,321	31,520	29,047	29,836	26,790	40,857	34,800
Nov.	24,950	20,437	27,289	28,853	28,080	26,792	37,461	
Dec.	25,070	31,902	27,199	28,748	26,293	25,492	31,232	
Totals	282,560	305,694	328,769	388,481	366,149	371,027	441,340	

Figures on Quarterly Basis

Quarter	1922	1923	1924	1925	1926	1927	1928	1929
Jan./Mar.		96,776	87,609	95,263	94,301	99,216	103,558	128,565
Apr./June	**127,360**	**89,493**	**75,674**	**104,099**	**87,109**	**103,242**	**103,500**	**139,292**
July/Sept.		55,621	83,813	99,493	93,793	89,210	117,573	
Oct./Dec.	155,067	63,617	92,656	85,789	83,212	80,860	117,597	
Totals	**282,427**	**305,507**	**339,752**	**384,644**	**358,415**	**372,528**	**442,227**	**267,857**

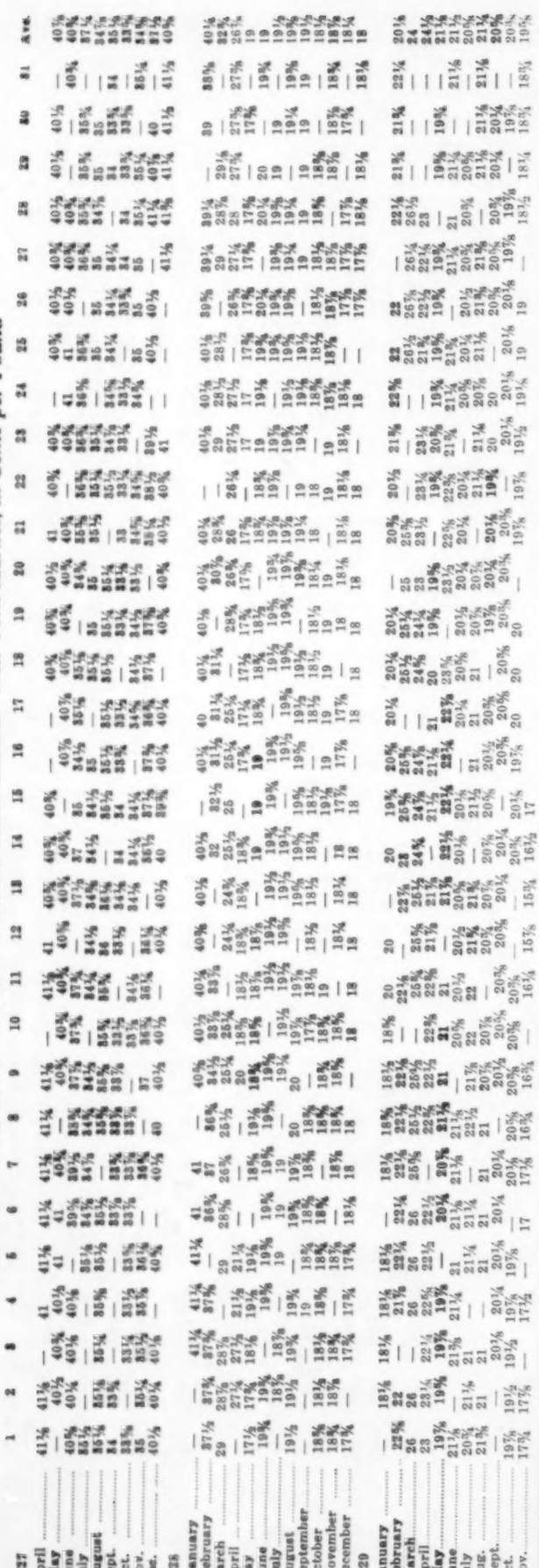
Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
Aug. 17	5,444	593	1,444	33	7,514
Aug. 24	5,560	602	1,401	23	7,586
Aug. 31	5,408	657	1,338	3	7,406
Sept. 7	8,313	1,691	1,256	38	11,298
Sept. 14	7,318	1,080	1,674	37	10,109
Sept. 21	7,514	533	1,549	15	9,611
Sept. 28	6,861	1,975	1,456	140	10,432
Oct. 5	7,913	1,748	1,632	52	11,345
Oct. 12	6,639	1,216	1,462	65	9,382
Oct. 19	6,991	590	1,819	383	9,783
Oct. 26	6,194	1,406	1,558	242	9,400
Nov. 2	7,776	960	2,012	51	10,799
Nov. 9	7,103	648	1,470	106	9,327

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*



Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents	1929 Cents
Jan.	18.82	32.75	25.86	36.71	79.50	38.75	40.25	20.14
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75	23.97
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	26.82	24.55
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	18.97	21.18
May	15.25	27.39	18.89	58.47	47.75	40.76	18.99	21.46
June	15.11	26.88	18.81	77.26	42.50	37.25	19.59	20.64
July	14.67	26.10	22.16	103.16	41.03	34.87	19.40	21.30
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	19.46	20.59
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	18.47	20.37
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	18.83	19.67
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	18.26	—
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	17.97	—
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	22.48	—

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Day	Aug.	Sept.	Oct.	Nov.	Day	Aug.	Sept.	Oct.	Nov.
1	11	—	9¾	8⅞	17	10¼	10¼	9¾	—
2	11	10¼	9½	8⅝	18	—	10¼	9⅞	—
3	—	10¼	9⅝	—	19	10¼	10¼	9⅞	—
4	—	10¼	9½	8½	20	10¼	10¼	—	—
5	—	10⅜	9¾	8½	21	10¼	10¼	9¾	—
6	10⅞	10⅛	—	8⅜	22	10¼	—	9⅝	—
7	10⅞	10⅛	9¾	8¼	23	10¼	10¼	9⅝	—
8	10⅜	—	10	8¼	24	10⅜	10¼	9¾	—
9	10⅜	10¼	10	8⅛	25	—	10⅛	9⅛	—
10	10¾	10¼	9⅞	—	26	10⅜	10	9⅛	—
11	—	10¼	9⅞	8⅛	27	10⅜	10	—	—
12	10⅝	10¼	10	7⅞	28	10½	9⅝	9⅛	—
13	10⅝	10¼	—	7⅞	29	10⅝	—	9	—
14	10⅝	10¼	10	8⅜	30	10¼	9⅜	9⅛	—
15	10½	—	10	8⅜	31	10¼	—	9⅛	—
16	10⅜	10¼	9⅞	—					

Average Monthly Price Per Pound

Month	1927 Pence	1928 Pence	1929 Pence	Month	1927 Pence	1928 Pence	1929 Pence
Jan.	19.410	19.310	9.942	Aug.	17.202	9.300	10.505
Feb.	19.021	15.713	11.875	Sept.	16.293	8.530	10.160
Mar.	20.125	12.736	12.135	Oct.	16.366	8.807	9.620
Apr.	19.897	8.864	10.490	Nov.	18.159	8.596	—
May	19.769	8.845	10.717	Dec.	19.690	8.570	—
June	17.880	9.293	10.580	Average			
July	16.770	9.312	11.065	for Year	18.375	10.656	—

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Oct.	Nov.	Day of Month	Oct.	Nov.	Day of Month	Oct.	Nov.
1	18.80	18.10	11	18.55	17.30	21	18.05	—
2	18.95	18.05	12	18.55	17.00	22	18.50	—
3	18.90	—	13	—	17.20	23	18.15	—
4	18.90	17.90	14	18.35	17.30	24	18.40	—
5	19.00	—	15	18.35	17.50	25	18.40	—
6	—	17.30	16	18.25	—	26	18.40	—
7	19.10	17.35	17	18.00	—	27	—	—
8	18.65	17.60	18	18.00	—	28	18.25	—
9	18.65	17.50	19	18.00	—	29	18.10	—
10	18.65	—	20	—	—	30	18.35	—
						31	18.10	—

Average Monthly Price Per Pound

Month	1927 Cents	1928 Cents	1929 Cents	Month	1927 Cents	1928 Cents	1929 Cents
Jan.	13.42	19.12	20.22	Aug.	20.04	19.28	18.62
Feb.	14.10	18.40	20.21	Sept.	21.95	18.67	18.83
Mar.	14.32	19.38	20.19	Oct.	20.22	19.62	18.46
Apr.	14.75	20.63	20.29	Nov.	20.22	19.84	—
May	16.07	21.58	19.41	Dec.	19.58	20.22	—
June	16.85	21.50	18.74	Average			
July	18.00	21.36	18.62	for Year	17.49	19.97	—

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At End of	ON HAND			AFLOAT			ON HAND AND AFLOAT		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	76,172	110,244	76,342	45,312	41,256	78,596	121,484	151,500	154,938
Feb.	91,186	108,955	90,058	42,166	43,316	63,825	133,352	152,271	153,883
March	85,740	114,061	100,536	49,600	39,324	56,476	135,340	153,385	157,012
April	92,757	113,083	107,659	38,963	33,986	55,409	131,720	147,069	163,068
May	94,568	105,356	97,192	44,181	34,374	55,404	138,744	139,730	152,596
June	89,250	90,198	92,061	47,233	40,001	46,035	136,483	130,119	138,096
July	98,469	83,242	92,535	40,687	42,304	38,858	139,056	125,546	134,393
Aug.	96,148	68,994	90,769	40,937	51,875	41,618	137,085	120,869	132,387
Sept.	97,829	68,851	84,362	37,966	48,566	49,480	135,793	117,417	133,842
Oct.	97,452	66,421	88,483	42,804	41,571	49,835	140,256	107,992	138,318
Nov.	101,034	61,956		37,076	68,119		138,110	130,075	
Dec.	100,130	66,166		47,938	68,764		148,068	134,930	

(Rubber Manufacturers' Association figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1921	1922	1923	1924	1925	1926	1927	1928	1929
Jan.	56,573	67,252	73,498	57,460	27,172	9,994	54,994	66,524	25,191
Feb.	59,439	67,623	70,483	56,732	23,425	10,004	58,826	62,964	25,554
Mar.	63,913	66,670	68,438	55,647	18,104	13,127	63,055	58,272	28,214
Apr.	68,759	68,637	58,770	54,559	12,949	18,773	66,897	53,425	31,368
May	70,403	70,146	54,439	51,615	5,895	20,384	67,169	44,628	31,290
June	69,408	71,597	51,050	51,115	5,318	23,984	63,902	38,756	31,025
July	71,065	71,515	49,937	52,073	4,258	27,727	63,717	35,429	30,080
Aug.	73,211	72,112	58,427	49,700	4,619	30,165	64,491	32,084	35,642
Sept.	72,175	70,977	54,523	44,011	5,453	35,077	68,236	31,440	42,188
Oct.	69,229	68,536	58,891	37,523	5,086	42,138	69,569	24,207	
Nov.	70,786	68,548	60,074	33,593	3,869	44,057	67,050	17,775	
Dec.	69,792	72,299	60,246	29,488	5,697	48,918	63,793	19,815	

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1928					
November	22,919	21,494	20,194	18,724	
December	16,855	16,517	17,669	18,821	19,727
1929					
January	21,953	23,016	23,547	24,423	
February	25,389	25,413	24,757	25,005	
March	25,441	25,920	26,442	27,656	28,077
April	28,934	30,446	30,503	31,213	
May	31,580	31,127	30,955	30,893	
June	31,539	31,635	31,127	30,617	30,982
July	29,996	30,661	30,790	30,167	
August	30,937	31,444	33,573	34,651	35,605
September	36,620	37,901	40,151	42,077	
October	43,478	44,339	45,711	46,819	
November	48,092	49,302			

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1927	1928	1929	End of	1927	1928	1929
Jan.	25,440	25,868	29,617	July	22,558	18,663	33,859
Feb.	26,766	22,867	32,373	Aug.	25,764	18,971	30,834
Mar.	27,844	20,538	29,437	Sept.	25,178	14,898	32,138
Apr.	24,543	16,946	26,474	Oct.	25,790	12,149	33,770
May	25,133	17,437	30,764	Nov.	28,369	29,188	
June	21,898	18,207	30,403	Dec.	25,798	32,895	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1923	23,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1925	26,001,664	66.8	1928	24,247,282	81.6
1929					
January	1,835,207	79.4	July	1,896,666	78.2
February	2,265,024	80.8	August	1,570,099	79.4
March	2,613,389	80.4	September	2,110,003	80.7
April	2,729,899	81.3	October	1,647,350	76.4
May	2,574,224	76.5	November		
June	2,184,219	75.3	December		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1925	1926	1927	1928	1929
January	14,386,000	17,582,000	17,888,000	20,938,000	22,602,000
February	13,210,000	15,814,000	18,240,000	21,136,000	22,776,000
March	14,890,000	19,302,000	22,464,000	24,041,000	28,495,000
April	19,013,000	20,848,000	23,371,000	25,712,000	32,019,000
May	20,459,000	24,213,000	26,579,000	27,355,000	34,117,000
June	20,724,000	23,803,000	27,799,000	29,022,000	33,163,000
July	22,879,000	24,752,000	29,784,000	30,960,000	36,860,000
August	22,323,000	26,912,000	29,779,000	33,148,000	37,759,000
September	20,177,000	22,929,000	28,409,000	29,691,000	34,193,000
October	19,826,000	23,973,000	25,497,000	30,610,000	
November	18,024,000	20,618,000	24,400,000	26,222,000	
December	17,954,000	21,419,000	23,718,000	26,644,000	
TOTAL	223,865,000	262,165,000	297,928,000	327,932,000	

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	40,932	45,259	51,633	60,845	61,237	64,439	77,944
Shipments	39,987	45,204	50,120	59,262	59,002	64,059	74,296
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264	13,624

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	4,965	5,358	6,722	4,932	5,394	6,626	10,432	9,949	13,712
Feb.	5,095	6,363	6,912	4,458	5,031	5,282	11,075	11,721	15,495
Mar.	6,276	6,819	7,519	5,701	5,731	6,708	11,563	12,389	16,851
Apr.	6,299	6,178	7,884	5,701	5,812	7,294	12,122	12,71.	16,929
May	6,151	6,759	8,145	5,657	6,457	7,184	12,462	13,024	17,849
June	6,202	6,692	7,304	6,253	7,117	7,254	12,462	12,162	17,957
July	5,087	6,498	6,475	5,973	7,895	7,855	11,326	11,157	15,830
Aug.	5,752	7,469	5,806	6,393	8,403	7,845	10,721	10,034	14,226
Sept.	4,822	6,802		5,717	7,145		9,722	9,765	
Oct.	4,773	7,326		4,799	5,717		9,665	11,520	
Nov.	4,502	6,075		4,306	4,998		10,136	12,579	
Dec.	4,497	5,605		4,165	4,591		10,264	13,624	

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927	1928
Production	50,850	60,116	70,706	82,614	76,618	70,823	80,180
Shipments	49,673	59,072	68,016	81,004	71,591	72,896	77,127
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692	16,117

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1927	1928	1929	1927	1928	1929	1927	1928	1929
Jan.	5,337	5,441	6,517	6,016	6,072	7,242	15,585	12,982	15,386
Feb.	5,658	6,895	6,769	5,120	5,431	5,278	16,075	14,650	16,999
Mar.	7,184	6,231	7,466	6,157	5,731	6,737	17,096	15,573	17,750
Apr.	7,373	6,661	7,634	6,359	5,702	7,164	17,801	16,638	18,134
May	6,737	7,168	7,660	6,140	6,300	7,038	18,389	17,702	18,928
June	6,306	6,953	6,978	6,832	7,136	6,950	17,858	17,159	18,741
July	5,284	6,674	6,178	7,070	8,729	8,113	16,004	14,974	16,832
Aug.	6,480	8,343	5,846	7,983	9,350	8,183	14,664	13,931	14,157
Sept.	5,651	7,103		6,758	7,154		13,511	13,543	
Oct.	5,065	6,929		5,024	5,662		13,539	15,285	
Nov.	4,775	5,592		4,723	5,002		13,585	15,743	
Dec.	4,969	5,184		4,712	4,858		13,692	16,117	

(1) Rubber Manufacturers' Association figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			Grand Total
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927	3,393,887	2,938,868	453,019	179,426	146,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	282,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March	412,825	371,408	41,417	9,724	7,478	2,246	422,549
April	409,948	364,877	45,071	24,240	20,546	3,694	434,188
May	425,990	375,798	50,192	33,942	29,764	4,178	459,932
June	396,967	356,439	40,528	28,399	25,341	3,058	425,366
July	390,445	237,933	52,512	25,226	20,122	5,104	415,671
Aug.	458,429	400,689	57,740	31,245	24,274	6,971	489,674
Sept.	413,722	358,872	54,850	21,193	16,572	4,621	434,915
Oct.	397,096	339,976	57,120	18,536	13,016	5,520	415,632
Nov.	256,936	217,256	39,680	11,769	8,154	3,615	268,705
Dec.	233,135	205,144	27,991	9,425	6,734	2,691	242,560
TOTAL	4,857,384	3,826,613	530,771	242,382	196,737	45,645	4,599,944
1929							
Jan.	402,154	350,617	51,537	21,501	17,164	4,337	423,655
Feb.	466,084	407,589	58,495	31,287	28,486	2,801	497,371
March	584,733	513,266	69,559	40,621	32,833	7,788	625,354
April	620,656	538,679	81,977	41,901	34,392	7,509	662,557
May	603,969	516,055	86,596	31,559	25,129	6,430	635,528
June	545,252	453,956	91,296	21,492	16,511	4,981	566,744
July	500,331	427,213	73,118	17,461	13,600	3,861	517,792
Aug.	499,629	444,711	54,918	14,214	11,037	3,177	513,843
Sept.	415,332	365,651	49,681	13,817	10,710	3,107	429,149
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(Long Tons)

	BRITISH MALAYA[1]								DUTCH EAST INDIES[2]						
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[3]	India & Burma[4]	Sarawak[4]	British North Borneo[4]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[4]	Amazon Valley	All Other[4]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,866
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,845	188,477	55,356	11,321	10,923	6,582	5,472	55,297	77,815	142,171	8,645	28,782	15,633	606,474
1928	409,430	149,787	259,643	57,267	10,790	10,087	6,698	4,813	58,848	82,511	121,770	9,548	21,129	10,690	653,794
1927:															
Oct.	29,846	15,801	14,045	5,245	802	721	591	542	3,810	7,755	13,633	775	2,752	939	51,520
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	591	600	4,127	6,587	14,395	683	2,369	1,627	46,878
Dec.	32,185	17,865	14,320	4,130	1,395	946	592	664	5,763	7,878	13,438	1,191	3,340	1,444	55,101
1928:															
Jan.	27,789	16,618	11,171	3,830	1,605	842	581	525	4,851	7,988	11,774	1,100	2,273	1,026	47,565
Feb.	28,848	12,911	15,937	4,947	1,081	667	581	536	4,052	6,757	8,630	787	1,612	1,276	46,860
Mar.	27,879	10,508	17,371	3,683	775	645	581	269	3,999	5,825	9,690	700	2,750	1,211	47,499
Apr.	20,139	9,335	10,804	3,233	789	630	494	258	3,993	5,040	5,499	736	1,014	1,323	33,810
May	26,483	10,350	16,133	3,091	654	842	494	241	4,943	5,355	10,347	717	2,602	1,135	45,994
June	22,994	16,168	6,826	3,107	963	926	494	451	5,419	5,863	13,655	725	1,399	960	40,788
July	30,481	13,383	17,098	5,129	1,043	905	593	366	5,602	7,566	11,594	698	1,264	873	52,731
Aug.	35,674	15,114	20,560	5,720	398	1,227	593	544	5,668	7,438	11,893	712	1,732	450	56,936
Sept.	29,769	11,239	18,530	4,675	457	938	594	447	4,956	6,536	9,863	969	1,614	494	50,073
Oct.	24,476	12,603	11,873	3,999	864	949	564	457	5,295	7,474	10,124	513	1,399	732	44,243
Nov.	68,135	10,436	57,699	8,005	1,048	772	564	425	4,950	7,902	7,805	943	1,790	623	92,526
Dec.	66,763	11,122	55,641	7,848	1,113	744	565	294	5,120	8,792	10,896	948	2,220	588	94,769
1929:															
Jan.	52,546	13,415	39,131	8,301	1,664	873	600	461	5,640	8,067	11,076	850	2,134	642	79,439
Feb.	47,926	12,103	35,823	7,064	1,117	955	600	495	6,572	7,511	10,384	807	2,104	520	73,952
Mar.	49,448	14,553	34,895	6,583	1,413	758	601	499	5,515	6,620	10,629	658	2,332	786	71,289
Apr.	49,816	11,414	38,402	5,097	727	747	548	306	5,997	6,645	11,321	673	1,950	569	72,982
May	43,960	15,593	28,367	5,723	800	966	548	453	6,264	6,961	13,437	650	1,922	733	66,824
June	40,308	14,344	26,054	5,563	1,122	1,061	547	422	5,582	6,693	11,270	608	1,398	548	60,868
July	46,454	15,071	31,383	5,457	974	1,247	500*	462	6,422	7,192	13,995	555	1,457	543	70,187*
Aug.	50,441	15,469	34,972	6,079	685	993	500*	431	4,644	7,298	10,782	545	1,563	499	68,991*
Sept.	53,484	12,392	41,092	7,961	384	832	500*	406	4,708	7,517	10,149	755	1,566		
Oct.	47,937	12,516	35,421	8,411								893	1,606		

(1) Malayan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, 3,263 in 1926, 2,439 in 1927 and 1,497 in 1928. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included— such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, 20 tons in 1926, about ½ ton in 1927, and 1 ton in 1928. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, 44 tons in 1926, 84 tons in 1927, and 1,459 tons in 1928. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(Long Tons)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (da)	Italy	Russia (ee)	Australia (ed)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,758	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,878
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,984	6,430	2,493	2,643	172	-3,807	1,778	589	587	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,872	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,491
1926	395,667	84,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,649
1927	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,482	636	4,224	2,055	2,672	627,789
1928	404,496	4,846	36,498	37,855	30,447	25,621	12,483	15,134	8,430	7,958	2,243	4,418	3,178	3,138	596,695
1927:															
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,539
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	245	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300	47,028
1928:															
Jan.	37,120	1,921	1,764	2,485	2,290	1,361	760	755	802	589	52	261	335	376	50,871
Feb.	30,926	3,143	2,526	2,984	2,553	1,248	437	783	616	599	98	307	296	297	46,813
Mar.	36,893	3,179	1,902	3,521	2,989	1,694	763	231	918	816	95	351	497	398	54,247
April	35,663	—2,280	2,204	2,719	1,938	2,324	1,114	1,820	832	575	280	339	304	159	48,001
May	28,660	—5,822	3,297	2,944	2,180	2,288	1,090	3,893	655	746	209	485	220	213	41,558
June	25,143	—3,031	3,597	2,968	2,186	2,102	984	4,111	348	743	133	346	251	182	40,063
July	28,170	—1,374	3,518	3,387	2,692	2,026	1,598	724	591	895	395	294	175	384	43,475
Aug.	28,827	48	3,527	2,744	2,447	1,868	875	632	707	519	316	359	58	94	43,021
Sept.	36,800	4,199	3,524	3,553	2,812	1,837	1,278	20	603	597	345	377	277	235	56,457
Oct.	41,667	—934	3,728	4,386	2,943	3,711	1,049	98	766	696	141	527	250	318	59,346
Nov.	33,846	—3,141	3,278	3,694	2,799	2,150	1,340	689	837	544	81	337	252	282	46,938
Dec.	40,781	8,438	3,633	2,470	2,618	3,002	1,145	1,378	755	639	148	435	263	200	65,905
1929:															
Jan.	53,922	11,951	5,645	4,711	3,759	3,776	1,481	956	1,061	749	218	638	179	525	89,571
Feb.	61,231	5,179	5,001	4,613	2,908	2,727	1,259	684	1,131	627	113	226	115	356	86,275
Mar.	46,391	9,068	4,409	4,586	4,961	2,630	1,515	716	725	931	316	354	80	409	77,091
Apr.	52,447	8,295	4,854	5,351	3,177	2,308	1,407	703	1,518	750	144	956	40	445	82,395
May	48,350	5,112	3,152	3,682	2,937	2,314	1,417	996	1,437	854	201	468	37	277	71,233
June	38,676	4,787	6,814	3,948	3,075	1,593	1,624	695	2,215	672	687	507	24	420	65,737
July	40,914	4,993	4,839	3,559	3,205	2,388	2,023		2,918	1,039	253	519		465	
Aug.	35,207	14,594	4,645	4,082	2,879	3,663	908		724	902	254	429		319	
Sept.	32,171	17,010		4,494			1,224		853	672	253				

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—Official statistics of rubber imports by Soviet Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation; such imports amounted to 4,305 tons in 1926; to 5,010 tons in 1927; to 3,076 in 1928; and to 743 tons in the first 8 months of 1929.

Domestic Production of Miscellaneous Rubber Goods

	Rubber Proofed Fabrics Yards	Rubber Heels Pairs	Rubber Soles Pairs	Mechanical Goods Shipments Dollars
1924	25,020,000	186,279,000	(1)	$48,615,000
1925	23,988,000	206,970,000	16,211,620 (2)	64,877,000
1926	29,328,000	183,312,000	12,253,000	76,789,000
1927	37,872,000	201,014,000	27,160,000	68,625,000
1928	41,179,000	235,170,000	37,645,000	69,114,000
1928:				
January	2,177,000	17,682,000	3,431,000	$5,630,000
February	2,575,000	19,181,000	3,628,000	5,838,000
March	2,853,000	22,583,000	3,747,000	6,675,000
April	2,416,000	18,575,000	2,928,000	5,406,000
May	2,744,000	21,597,000	3,519,000	6,274,000
June	2,953,000	18,763,000	3,321,000	6,126,000
July	3,447,000	17,620,000	3,168,000	5,157,000
August	4,613,000	21,289,000	3,461,000	6,306,000
September	4,966,000	21,451,000	2,725,000	5,193,000
October	5,914,000	21,932,000	2,297,000	5,837,000
November	4,173,000	18,686,000	2,649,000	5,201,000
December	2,348,000	15,811,000	2,771,000	5,271,000
1929:				
January	2,828,000	19,975,000	3,576,000	6,033,000
February	3,095,000	18,979,000	2,869,000	6,135,000
March	3,952,000	17,226,000	2,746,000	7,013,000
April	4,000,000	17,256,000	2,601,000	7,035,000
May	4,860,000	19,541,000	2,916,000	7,189,000
June	4,409,000	20,007,000	2,502,000	6,792,000
July	4,260,000	19,315,000	1,295,000	6,306,000
August	5,085,000	23,095,000	2,948,000	6,792,000

(1) Not available; (2) Last 9 months only.
Source: "Survey of Current of Business of the Department of Commerce."

United States Imports of Guayule Rubber and Related Gums

(All quantities in Long Tons)

	Guayule		Balata		Jelutong		Gutta Percha	
	Tons	Dollars	Tons	Dollars	Tons	Dollars	Tons	Dollars
1919	1,430	760,690	727	937,038	8,332	2,213,964	2,900	1,068,698
1920	758	345,985	1,064	1,260,043	5,672	2,068,501	3,183	1,520,309
1921	58	26,945	814	1,077,859	1,745	351,893	985	333,564
1922	127	57,040	812	978,765	2,335	403,812	818	281,012
1923	1,155	542,227	700	898,524	4,565	853,308	912	375,167
1924	1,356	536,392	464	568,456	6,165	1,237,100	1,408	463,610
1925	3,781	1,803,448	517	574,750	6,749	1,642,531	1,603	629,284
1926	4,305	2,562,096	354	327,213	7,263	3,127,757	1,445	661,156
1927	5,018	2,674,957	582	447,246	7,785	2,448,657	1,494	728,172
1928:	3,075	1,755,685	731	430,855	7,552	2,540,059	1,597	777,128
July	191	100,342	123	46,747	373	113,295	81	27,344
Aug.	—	——	399	165,460	451	126,962	147	60,738
Sept.	—	——	60	38,198	2,028	713,736	125	56,768
Oct.	—	——	121	59,358	429	129,065	239	94,570
Nov.	—	——	59	41,119	472	140,116	88	35,409
Dec.	—	——	83	58,311	522	156,154	145	59,911
1929:								
Jan.	—	——	46	30,374	484	152,260	138	62,950
Feb.	—	——	82	70,209	823	255,594	40	19,806
Mar.	—	——	90	75,444	428	122,026	1	1,140
Apr.	83	38,241	163	93,240	1,086	315,621	1	1,086
May	125	57,260	70	67,891	752	212,400	76	24,053
June	145	62,808	31	26,038	802	248,143	77	25,612
July	200	86,175	49	46,440	572	180,065	14	5,807
Aug	190	80,443	58	47,769	575	171,733	—	——
Sept.	107	51,156	38	30,327	913	279,225	—	——

Reclaimed Rubber in the United States

(All Quantities in Long Tons—100% Basis)

Year	Production	Consumption Tons	Consumption % to Crude	Stocks*	Year	Production	Consumption Tons	Consumption % to Crude	Stocks*
1919	81,366	73,535	36.3	.....	1924	80,079	76,072	22.4	
1920	86,395	75,297	38.4	.....	1925	132,930	137,105	35.6	13,203
1921	36,725	41,351	24.1	.....	1926	180,582	164,500	45.9	23,218
1922	57,834	54,458	19.3	.....	1927	189,144	178,471	47.6	24,980
1923	74,766	69,534	22.7	.....	1928	208,516	223,000	50.4	24,785
1927:									
Jan.	16,526	12,374	39.3	25,903	July	15,488	13,842	47.4	26,599
Feb.	15,860	14,424	47.8	27,291	Aug.	15,109	15,836	47.3	25,157
Mar.	16,788	13,528	37.4	27,124	Sept.	14,392	14,790	54.3	23,429
Apr.	14,483	16,677	46.5	25,712	Oct.	16,127	17,292	64.5	22,176
May	16,159	15,754	46.1	26,419	Nov	15,477	14,876	55.5	21,728
June	16,652	15,547	46.0	25,811	Dec.	16,083	13,431	52.7	24,980
1928:									
Jan.	14,862	20,140	58.5	21,941	July	17,278	19,070	51.0	17,305
Feb.	15,291	18,670	55.4	20,848	Aug.	19,049	17,890	41.7	15,881
Mar.	17,069	20,680	57.9	19,558	Sept.	18,693	17,795	44.6	17,991
Apr.	15,393	19,280	58.8	19,283	Oct.	17,182	18,420	45.1	17,026
May	18,945	20,215	54.1	18,137	Nov.	18,245	18,380	49.1	22,399
June	18,781	18,140	48.2	18,709	Dec.	17,728	14,320	45.9	24,785
1929:									
Jan.	18,685	21,068	49.1	24,394	July	18,387	20,236	48.7	19,679
Feb.	18,094	19,829	47.7	23,305	Aug.	19,787	18,230	47.6	22,309
Mar.	19,984	20,867	46.7	22,076	Sept.	18,660	17,071	49.2	24,984
Apr.	19,899	22,435	47.3	20,680	Oct.	18,865	18,744	53.8	25,117
May	20,385	23,176	47.1	19,479	Nov.				
June	18,416	18,141	42.0	17,980	Dec.				

*Stocks on hand at the end of month or year. Exports of reclaimed rubber, not shown in this table, amounted to 8,540 tons in 1927 and 9,577 tons in 1928.

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